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THE BRITISH FLORA

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THE
BRITISH FLORA

COMPRISING THE

PHÆNOGAMOUS OR FLOWERING PLANTS AND THE FERNS

WITH NUMEROUS FIGURES ILLUSTRATIVE OF
THE UMBELLIFEROUS PLANTS, THE COMPOSITE PLANTS,
THE GRASSES, AND THE FERNS

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— "Call the vales, and bid them hither cast
Their bells and flow'rets of a thousand hues."

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INTRODUCTION.

THE object originally contemplated in preparing a new *Flora of the British Islands* was of a twofold nature: 1stly, to provide the student with a description of our native plants, arranged according to the simplest method; and, 2dly, to afford to the more experienced botanist a Manual, that shall be useful in the field as well as in the closet. In regard to the first object, the experience of nearly a hundred years has proved to every unprejudiced mind that no system can be compared to that of the immortal Swede, for the *facility* with which it enables any one, hitherto unpractised in Botany, to ascertain the genus of some previously known plant. And as to the second, almost every collector in this country had been so habituated to the Linnæan method by the labours of Sir J. E. Smith, that to have presented any other arrangement would have been of no avail.

In the first four editions of this *Flora*, therefore, the Linnæan method was followed; but in order to accustom the reader by degrees to the Natural System, an Appendix was given, in which the orders were characterized, so far at least as related to British plants. When, however, a fifth edition was required, so great was the demand in this country for something more than the Linnæan method, that it was considered the time had arrived for

1795 May

the experiment being fully made of using the Jussieuan or Natural System for the general arrangement ; while the Linnæan was introduced into the Preface as an index to the other, and particularly for beginners. That this experiment was not unsatisfactory is demonstrated by the fact, that a sixth edition was called for in 1850, and after an interval of about five years a seventh, and now a new one has been demanded. The Linnæan method is not, therefore, now reverted to. Before Dr. Walker-Arnott's name had been associated with the authorship of this Flora, he had published, chiefly for the use of his class, synoptical tables of the British orders and genera ; these, slightly modified, were inserted in the sixth and seventh, and will also be found in the present edition. Those of the orders are given under each great division, and of the genera under each order ; the detailed characters of the orders are placed as formerly at the head of the genera, and those of the genus at the head of the species.

By those who desire fuller information respecting the *natural affinities* of Plants, especially as concerns universal Botany, the following works may be studied with advantage :—Dr. Lindley's *Introduction to Botany*, and his admirable *Vegetable Kingdom* ; the 7th and last edition (by Sir W. J. Hooker) of Sir J. E. Smith's *Introduction to Botany* ; Dr. Balfour's *Manual of Botany*, and his *Class-Book of Botany* ; and Dr. Henfrey's *Elementary Course of Botany*.

In most Floras of this country published previously to the *British Flora*, however excellent in other respects, either too much or too little space was devoted to the generic and specific descriptions and synonymes : in the one case swelling the book to a size which entails both expense on the purchaser, and difficulty in consulting the several volumes ; in the other, reducing the technical characters to the shortest possible compass, so that they

can scarcely be available, except to persons who are partially acquainted with the plant under examination, or with some of its near allies. Between these extremes a middle course was steered, by giving diagnostic remarks where, and where only, they appeared necessary for the discrimination of British species, or such very distinct foreign ones as might possibly be found in this country, and be confounded with them. In the sixth, seventh, and also in the present edition these rules have been slightly departed from. So many species have been, of late years, introduced from the Continent with seed-corn, or have escaped from our gardens, and so many of our former well-known species have been separated into two or more, that it has been deemed proper to extend, in several instances, the characters of both the genera and species, introducing frequently a notice of the more minute parts which a practised botanist requires to examine, but which a student may omit, if his object be merely to attain a knowledge of the name, until he has advanced in the study. Rarely, however, have the genera or species been made to depend on such minute characters, and therefore few alterations have been proposed in the limits of either one or other from what will be found in former editions: when such alteration has taken place in the former, it is solely from a desire of simplifying the generic characters.

What is a genus, or what is a species, is a point upon which scarcely two botanists are quite agreed at the present day. With regard to the former, however much it may be necessary to subdivide in a system comprehending the known plants of the whole world, so as to retain only a limited number of species in each genus, the same does not apply to a local Flora; and it is there preferable to constitute sections or subgenera, particularly when the limiting characters are inconstant, difficult, or obscure. A *species*, in the Linnæan sense of the word, cannot be

so treated: it is formed, by our Maker, as essentially distinct from all other species as man is from the brute creation; "Species tot numeramus, quot diversæ formæ in principio sunt creatæ:" *Linn.* It ought neither for convenience to be united with others, nor be split into several on account of newly detected diversities of form; but the difficulty is to ascertain what is such a primitive or natural species, and how to characterize it, so as to include those numerous varieties and individuals now existing on the surface of the globe which have sprung from it, but of which none may bear greater resemblance to the original or typical form than they now do to each other. The history of the human race demonstrates that the descendants of a prototype vary much, particularly in external appearance; but every thing stamped by the finger of the Almighty has its power of variation limited; with Him there is no confusion, no blending of species, although man may not with his finite faculties be able to discover the boundaries He has assigned to each. It is here so great a difference of opinion exists. Some pronounce a species to be distinct if it presents a different habit or appearance to the eye, particularly if this be tolerably constant, although often indefinable: others consider it a species, although exhibiting little or no difference of aspect, provided that it possesses some constant character, however unimportant it may be; while a third party is of opinion that the validity of a species may be proved by the permanency of certain assigned characters under cultivation. One only of these tests is scarcely sufficient. Of the first there are few advocates; to indicate, indeed, ideal species without precise characters in words, by which alone others can readily comprehend what is meant, whether the specimens be living or dried, would be to allow Botany to relapse into a state scarcely better than we find it to have been 2000 years ago. The

second provides us with *artificial* or *Book* species, arising from that morbid appetite for novelties which, when truly new ones can no longer be detected in any country, induces many to separate those previously received and well known whenever tolerably constant characters can be devised for the subdivisions. As to cultivation, this is an excellent auxiliary, if properly applied; by it we may sometimes in a single year or two satisfactorily show that two supposed species are *one* and the *same*; but cultivation for many years cannot prove them *distinct*. The more we cultivate a plant, or the more it is limited in its wild state to a particular climate or place of growth, it frequently happens that the more permanency is given to the peculiarities of what was originally derived from the same root, or even seed-vessel, of another apparently widely different form. Hence a rare mountainous plant may frequently be a mere alpine permanent state of some common lowland species, or a Swedish species the more northern race or state of a southern one; and it is from this cause that we see in our gardens so many in cultivation (as in the genus *Achillea*), which cannot now be referred satisfactorily to any of the wild ones, although descended from them. Knowing, then, this tendency of all natural species to exhibit each many permanent forms, there appears to be less injury done by combining too much, than by subdivision, unless where there is an anatomical, physiological, chemical, or economical distinction. On the supposition that many species, composed probably of numerous individuals, were simultaneously called into existence on the third day of the creation, each distinct from the other, and destined to remain so, it is reasonable to suppose that all their descendants must have still a greater resemblance in general appearance, as well as in structure and properties, to each other, than the aggregate exhibits to any other aggregate of indivi-

duals; and this affords us now the only means of approximating to a knowledge of what constituted a typical species,—not, however, what is generally called the type of a species, such being merely that form or variety which the author knows best, has seen most of, or is most common. We have no way of ascertaining directly what was the primitive form of each, but we may infer it by combining individuals together, according to the number and importance of the organic characters common to them. Some of the descendants of each aboriginal species may occasionally appear to us to vary so much from the general characters exhibited, as to create doubts as to which of two allied nuclei they belong to. On the other hand, some of the forms or races connecting mere varieties may have become extinct from accidental causes. The doctrine of intermediate forms rested on by some appears, therefore, to be of little value for ascertaining what ought to be considered species, for we may find specimens exactly intermediate, as far as the human eye can judge, between two which are essentially distinct; and of others we may have varieties or races, without connecting forms. Our knowledge of natural species is thus the result obtained from a consideration of several important characters, after a careful comparison of foreign as well as British allied forms, rather than the discovery of one only, however constant, which latter may frequently indicate merely an artificial species, or, in other words, a variety.

Linnæus took nearly all his specific characters from conspicuous parts, especially from the stem and foliage; these organs are, however, liable to great variation, and therefore at the present day we are apt to fall into the opposite extreme, and to select minute ones: of these some are of trifling value, while others, principally derived from the flower or fruit, and sufficient to constitute

sub-genera, are connected with the habit of the plant, and cannot be neglected. Indeed the time may ere long arrive, when what are now called genera or sub-genera will alone be considered species, and another Linnæus be requisite to reduce the chaos into order. Mr. Bentham, in his "Handbook," has advanced boldly in this direction; but it does not seem expedient either to reduce what have been for long deemed distinct, or to subdivide them in the Flora of a single country, until the same principles have been successfully applied to all genera, Tropical as well as European. Those who study only specimens preserved in herbaria may occasionally combine too much; while others, who trust to living plants without testing the characters by dried specimens, are much too apt to raise forms, particularly if permanent in cultivation, to the rank of species. We have, therefore, endeavoured to follow a middle path: the species admitted in former editions are seldom reduced, unless where it was found that the characters were insufficient or variable; and as rarely has sanction been given to those which have been split off from others, by the ingenuity of a Fries, a Koch, or a Jordan. If in some cases, particularly in the genus *Hieracium*, this neomania has been yielded to, it has been partly on account of the remonstrances of our friends, and partly from the difficulty in ascertaining to which original species these aberrant forms ought to be referred; of several of them, indeed, we have not seen authentic specimens.

As to varieties, of late years a practice has prevailed of considering them to be departures from or abnormal states of some single form, which is assumed to be the type of that species: and thus the species is frequently characterized so as to exclude all but one variety, the others being appended like so many useless *disjecta*

membra. Between adopting this view, and holding them to be as many distinct species, there is little difference; they are distinct as far as the specific character is concerned; and it is this which, no doubt, has led to such varieties being frequently elevated to the rank of species. A generic character applies to not one only, but includes all the species referred to that genus; and a specific character, in the same way, ought to apply, without preference, to all the forms which, combined, constitute the typical species, and not to *var. a.* alone. In the present edition, therefore, we have endeavoured (unless, perhaps, in a few instances accidentally overlooked) either to extend the specific character, or to exclude from it those portions which are not common to all the varieties, making use of these to distinguish the varieties themselves from each other; this frequently tends to destroy the supposed distinction between the aggregate species and its allies, but will better enable our readers to see the slender grounds on which many are still retained by Botanical writers.

The design of this work would not allow of so many stations being given for the rarer plants as could have been wished; and, indeed, the Authors have been rather anxious to indicate the range of the species, than the precise spot where any particular one is found. The *Botanist's Guide* of Messrs. Turner and Dillwyn, Mr. H. C. Watson's *Remarks on the Geographical Distribution of British Plants*, his *New Botanist's Guide*, and particularly his *Cybele Britannica*, Dr. T. Mackay's *Flora Hibernica*, and the various local Floras and catalogues of species, may, for information on this head, be consulted with great advantage.

Several species were introduced by the late Sir J. E. Smith, not only into his *Flora Britannica*, but also into *English Botany* and the *English Flora*, which are uni-

versally acknowledged, at the present day, to be neither indigenous to the British Isles, nor naturalized among us. In this work we have permitted them to remain, except in a few instances, where there are grounds to believe that the original specimen was obtained from a garden, or that one plant had been mistaken for another. Those, however, which no longer exist in the given localities, or are known to occur only in cultivated fields, and to disappear with the crop, are usually placed within [], while the many that have been or are daily becoming naturalized among us, whether by the agency of man or of birds (unless such as are now common weeds, as *Ægopodium Podagraria*, *Chrysanthemum Leucanthemum*, *C. segetum*, *Centaurea Cyanus*, *Anagallis arvensis*, &c.), are branded with an asterisk (*). There are also numerous ones, as the *Impatiens fulva* and *Lilium Martagon*, which can have no claim whatever to a place in our Flora : in many cases, however, they have been briefly noticed at the close of an allied species or genus ; and when the genus itself is not British, an abridged character of it has been sometimes introduced into the conspectus at the head of its proper order, especially where the plant, like the *Mimulus guttatus*, is now so widely diffused that it might otherwise puzzle a student. With regard to synonyms, they are, with few exceptions, confined to that of the writer who first described the plant under the name adopted, or to the cases where a different name has been given by the authors of other Floras of this country ; but the reader will always find a reference to *English Botany* (*E. B.*) and its *Supplement* (*E. B. S.*). Those who desire a further knowledge of the various names which a species has unfortunately received, as well as a full specific character, or such as will exclude all other known plants wheresoever found, can only attain this

by consulting a General *Flora*, such as De Candolle's *Prodromus*.

It may be well to remark here that the season of flowering of the plants in the descriptive pages is indicated in the usual way by the numbers of the month; and that the symbols which precede these, viz. ☉, ♂, ♀, and ♄, signify:

- ☉ (the Sun), that the plant is of annual duration; because the earth requires a year to perform its revolution round the sun.
- ♂ (Mars), a biennial plant; because that planet is two years in performing a similar revolution.
- ♀ (Jupiter), a perennial plant or root; because of the great length of time, nearly 12 years, required by that planet for such a revolution.
- ♄ (Saturn), a shrub or tree; which, living for a great number of years, is represented by a planet, requiring nearly 30 years to revolve round the sun.

Any peculiar terms employed, particularly among the *Compositæ* and *Gramineæ*, are explained at the commencement of the respective orders. Reference may also be made to the genera, *Rosa*, *Rubus*, and *Hieracium*.

The term *Rhizome* has been usually applied to those underground stems with internodes, — whether short and thick as in *Arum*, or long, slender, and extensively creeping, as in *Carex arenaria*, — which are, in popular language, called roots. When, however, any difficulty is likely to arise, or when these require to be contrasted with tufted or fibrous roots in the same genus, the expression roots has been occasionally used in the Linnæan sense, it being thought desirable to render this *Flora* useful to those who have not had an opportunity of going through a course of Philosophical Botany. For the same reason bulbous and tuberous *roots* are still

spoken of, and also entire and compound leaves as defined by Linnæus; nor has it been thought advisable to employ all the terms now given to every modification of fruit, or those applied to inflorescence, from a consideration of its definite or indefinite nature.

The terms *smooth* and *round* (including rounded and roundish) are used in common language and by various authors in different ways, and seldom with ambiguity; but after the impression of this edition was considerably advanced, it was observed that these expressions (particularly among the Monocotyledonous plants), although quite intelligible to one who already knew the plant or its allies, might be readily misunderstood by others; and in the latter part of the volume it was found necessary to substitute words of a more precise meaning. It may be proper, therefore, to explain that in it *glabrous* is applied when without hairs, pubescence, or such like appendages; *even* (*lævis*) when without elevations or depressions; and *smooth* when there are no minute points, rendering the object scabrous or rough to the touch. *Round* has been restricted to the circumscription of a flat or nearly flat portion of a plant; *terete* to a stem, branch, or leaf (as in some *Junci*) which presents a circular section; and *globose* to what has length, breadth, and thickness, as a seed or a head of flowers. Other analogous terms, as *ovate*, *oblong*, &c., also require revision, being applied sometimes as if the object were solid, sometimes to a longitudinal section of it. The term *membranous* is also objectionable: by some it is used almost in the same sense as *scariose*; by others it is applied to leaves or fronds, merely in contrast with *coriaceous*; the first appears to be the legitimate interpretation, and it is that followed in this volume. All our English Glossaries are defective in not limiting these adjectives to one meaning only, and thus enabling

those who write descriptions to use language of greater precision.

In conclusion it may be proper to state, that for any opinions expressed in this Introduction, as also for all the alterations made in this edition, Dr. Walker-Arnott holds himself solely responsible, Sir William Hooker having been prevented, by his public duties, from taking any part in its revision.

1st October, 1860.

CLASSES AND ORDERS

OF

THE LINNÆAN SYSTEM OF BOTANY.

Flowers perfect, each with Stamens and Pistils.	Class	
	1. MONANDRIA .	1 <i>Stamen</i> in each flower.
	2. DIANDRIA .	2 <i>Stamens</i> ———
	3. TRIANDRIA .	3 ——— ———
	4. TETRANDRIA .	4 ——— ——— equal in height.
	5. PENTANDRIA .	5 ——— ———
	6. HEXANDRIA .	6 ——— ——— equal in height,
	7. HEPTANDRIA .	7 ——— ——— or 3 long and 3
	8. OCTANDRIA .	8 ——— ——— short.
	9. ENNEANDRIA .	9 ——— ———
	10. DECANDRIA .	10 ——— ———
	11. DODECANDRIA .	from 12 to 19.
	12. ICOSANDRIA .	20 or more, on the <i>calyx</i> .
	13. POLYANDRIA .	20 or more, on the <i>receptacle</i> .
	14. DIDYNAMIA .	4 ; 2 long and 2 short.
	15. TETRADYNAMIA	{ 6 ; 4 long and 2 short.
		<i>Flowers cruciform.</i>
	16. MONADELPHIA	<i>Filaments</i> united at the base in one set.
	17. DIADELPHIA .	<i>Filaments</i> united in two sets ; <i>Flowers</i>
		<i>mostly papilionaceous.</i>
	18. POLYADELPHIA	<i>Filaments</i> united in three or more sets.
	19. SYNGENESIA .	<i>Anthers</i> united ; <i>Flowers</i> compound.
	20. GYNANDRIA .	<i>Stamens</i> inserted on the <i>Pistil</i> .
	21. MONOECIA . .	<i>Stamens</i> and <i>Pistils</i> in <i>separate Flowers</i>
		on the <i>same plant</i> .
	22. DIOECIA . .	<i>Stamens</i> and <i>Pistils</i> in <i>separate Flowers</i>
		on <i>two separate plants</i> .
	23. POLYGAMIA .	<i>Stamens</i> and <i>Pistils</i> <i>separate</i> in some
		flowers, <i>united</i> in others, either on the
		<i>same plant</i> , or on <i>two</i> or <i>three</i> distinct
		ones.
	24. CRYPTOGAMIA .	<i>Fructification</i> concealed.

The Twenty-four Classes are subdivided into ORDERS.

(See the characters of the orders in the next page.)

xviii CLASSES AND ORDERS OF LINNÆAN SYSTEM.

The *Orders* of the first thirteen Classes are founded on the number of *Styles* in each flower :

MONOGYNIA, 1 *Style*; DIGYNIA, 2; TRIGYNIA, 3; TETRAGYNIA, 4; PENTAGYNIA, 5; HEXAGYNIA, 6; HEPTAGYNIA, 7; OCTOGYNIA, 8; DECAGYNIA, 10; DODECAGYNIA, 12; POLYGYNIA, many *Styles*.

The Orders of the 14th Class are two :

1. GYMnosPERMIA . . . *Seeds* 4, apparently naked.
2. ANGiosPERMIA . . . *Seeds* several in a seed-vessel.

The Orders of the 15th Class are two :

1. SILICULOSA *Seeds* in a short Pod or Pouch.
2. SILIQUOSA *Seeds* in a long Pod.

In the 16th, 17th, and 18th Classes, the Orders are founded on the number of *Stamens* in each set :

TRIANDRIA, 3; PENTANDRIA, 5; DECANDRIA, 10, &c., in each set.

The Orders of the 19th Class are three, and are founded on the structure of the flower, which is *compound* :

1. ÆQUALIS . . . All the *florets* perfect.
2. SUPERFLUA . . . { *Florets* of the *disk* perfect; of the
ray, with Pistil only.
3. FRUSTRANEA . . . { *Florets* of the *disk* perfect; of the *ray*,
with neither Stamens nor Pistil.

The Orders of the 20th Class are founded on the number of the *Stamens* :

MONANDRIA, 1; DIANDRIA, 2, &c.

The Orders of the 21st and 22d Classes are founded on the number, union, and situation of the *Stamens* :

MONANDRIA, DIANDRIA, &c. MONADELPHIA, &c.

The Orders of the 23rd Class are three, and are :

MONECIA, *perfect flowers*, accompanied with others that are *barren* or *sterile* (without *pistil*), or *fertile* (without *stamens*), or *both*, all on *one plant*.

DIGECIA, *perfect flowers* on *one plant*, *barren* or *fertile* or *both* on *another*.

TRIGECIA, *perfect flowers* on *one plant*, *fertile* on a *second*, and *barren* on a *third*.

The Orders of the 24th Class are Natural Orders or Families :

1. FILICES¹; 2. MUSCI; 3. HEPATICÆ; 4. LICHENES;
5. FUNGI; 6. CHARACEÆ; 7. ALGÆ.

¹ In the following pages considered a subclass; including *Polypodiaceæ*, *Osmundaceæ*, *Ophioglossaceæ*, *Lycopodiaceæ*, *Marsiliaceæ*, and *Equisetaceæ*.

SYNOPTICAL TABLE

OF THE

CLASSES, ORDERS, AND GENERA OF BRITISH PLANTS,

ARRANGED

ACCORDING TO THE LINNÆAN METHOD;

WITH REFERENCES TO THE PAGES WHERE THE SPECIES ARE
DESCRIBED IN THE BODY OF THE WORK.

CLASS I. MONANDRIA.¹ 1 *stamen*.

Order I. MONOGYNIA.² 1 *style*.

* *Leaves without stipules.*

† *Flowers not glumaceous.*

1. CHENOPODIACEÆ. Perianth single, inferior. — Terrestrial plants. (CHENOPODIUM. SALICORNIA.) p. 358.
2. HIPPURIS. Perianth single, superior, forming a very indistinct rim to the germen. Style and stigma single. — Fresh-water erect plants. p. 146.
3. ZOSTERA. Perianth 0. Stamens and pistils inserted alternately in two opposite rows upon one side of a thin flat spadix. Style bifid. — Marine plants with long leaves. p. 486.
4. CENTRANTHUS. Perianth double. Calyx a thickened margin at the top of the germen, at length unfolding into a pappus. Corolla spurred at the base. — Terrestrial plants. p. 200.

¹ From *μνος*, *one*, and *ανρ*, here applied to the stamen. The other classes, as far as *Icosandria*, meaning 20 stamens, are likewise derived from the Greek numerals. *Polyandria* in the same way is from *πολυς*, *many*.

² From *μνος*, *one*, and *γυνη*, here made applicable to the pistil or style. When the styles are so short as not to be visible, the stigmas are reckoned.

†† *Flowers glumaceous, imbricated.*

5. CYPERACEÆ. Leaves with entire sheaths. p. 487.

** *Leaves with stipules adnate to their petiole.*

6. ALCHEMILLA. Perianth single, inferior, turbinate. Style lateral. Stigma entire. p. 132.

Ord. II. DIGYNIA. 2 styles.

7. CALLITRICHE. Flowers axillary, solitary. Fruit with 4 cells and seeds.—Leaves opposite. Aquatic or marsh plants. p. 387.

8. FESTUCA. Flowers imbricated, glumaceous. Fruit a caryopsis, 1-seeded.—Leaves alternate. Terrestrial grasses. p. 556.

CLASS II. DIANDRIA. 2 stamens.

Order I. MONOGYNIA. 1 style.

* *Perianth double, inferior.*

† *Corolla monopetalous, regular.*

1. LIGUSTRUM. Cor. 4-cleft. Berry 2-celled. p. 278.

†† *Corolla monopetalous, irregular. Seeds inclosed in a pericarp which forms one piece.*

2. VERONICA. Cor. 4-cleft, rotate, not spurred. Caps. 2-celled. p. 304.

3. LENTIBULARIACEÆ. Cor. ringent or personate, spurred. Caps. 1-celled. p. 340.

††† *Corolla monopetalous, irregular. Germen and fruit deeply 4-lobed, or apparently formed of 4 naked seeds.*

4. LABIATÆ.—(LYCOPUS and SALVIA.) p. 320.

†††† *Sepals and petals 4.*

5. CRUCIFERÆ. p. 21.

** *Perianth double, superior.*

6. CIRCÆA. Petals 2. p. 145.

*** *Perianth single and inferior or none.*

7. FRAXINUS. Perianth 0. Caps. 2-celled, compressed, foliaceous at the extremity.—Trees. p. 278.

8. CRUCIFERÆ. Perianth 4-leaved.—Herbaceous plants. p. 21.

9. CHENOPODIACEÆ. Perianth 5-cleft, or obscurely lobed. Fruit 1-seeded utricle.—Terrestrial plants. (SALICORNIA, CHENOPODIUM.) p. 358.
10. LEMNA.¹ Perianth monophyllous, membranous, ureolate. Fruit utricular.—Fresh-water minute floating plants. p. 477.
11. CYPERACEÆ. Flowers glumaceous, imbricate.—Leaves with entire sheaths. (CLADIUM and RHYNCHOSPORA.) p. 487.

Ord. II. DIGYNIA. 2 styles.

12. CALLITRICHE. Flowers solitary, axillary. Fruit of 4 cells and seeds.—Leaves opposite. p. 387.
13. GRAMINEÆ. Flowers glumaceous, imbricate. Fruit a caryopsis, 1-seeded.—Leaves alternate with split sheaths. (ANTHOXANTHUM, HIEROCHLOE, and BROMUS.) p. 522.

CLASS III. TRIANDRIA. 3 stamens.

Order I. MONOGYNIA. 1 style.

* *Perianth superior.*

1. VALERIANACEÆ. Perianth double. Cor. gibbous at the base, 5-cleft. Fruit 1-seeded. p. 199.
2. IRIDACEÆ. Perianth single, petaloid, 6-cleft. p. 439.

** *Flowers inferior (dry or glumaceous). Leaves parallel-veined.*

3. CYPERACEÆ. Flowers each of a single glume, several imbricate and forming a spikelet. Achene 1-seeded.—Leaves with entire sheaths. p. 487.
4. GRAMINEÆ. Flowers of 2 glumellas, with or without external glumes. Caryopsis 1-seeded.—Leaves with split sheaths. (NARDUS, SESLERIA, and SPARTINA.) p. 522.
5. JUNCUS. Perianth 6-partite. Caps. 3-celled, several-seeded. p. 460.

*** *Flowers inferior. Leaves netted-veined.*

6. CHENOPODIUM. Perianth 5-cleft. p. 359.

Ord. II. DIGYNIA. 2 styles.

7. GRAMINEÆ. p. 522.

Ord. III. TRIGYNIA. 3 styles.

8. MONTIA. Cal. of 2 leaves. Caps. solitary, 3-valved, 3-seeded.—Stipules none. p. 150.

¹ This genus, placed here by Linnæus, is really monœcious, and the supposed perianth is a spatha with one barren and one fertile flower.

9. HOLOSTEUM. Cal. of 5 leaves. Caps. solitary, 1-celled, opening at the end with 6 teeth.—Stipules none. p. 70.
 10. POLYCARPON. Cal. of 5 leaves. Caps. solitary, 1-celled, 3-valved.—Stipules membranous. p. 152.
 11. TILLÆA. Cal. of 3 leaves. Carpels 3.—Stipules wanting. p. 154.
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CLASS IV. TETRANDRIA. 4 stamens equal in height.

Order I. MONOGYNIA. 1 style.

* *Perianth double. Corolla monopetalous, superior.*

1. DIPSACACEÆ. Flowers capitate, within a common involucre. Calyx double: one cup-shaped or membranous, the other minute or of bristles. Fruit 1-seeded. p. 202.
2. RUBIACEÆ.¹ Flowers solitary. Calyx entire or toothed at the margin. Fruit 2-seeded.—Leaves whorled. p. 194.

** *Perianth double. Corolla monopetalous, inferior. Seeds 2 or more.*

† *Germen deeply 4-lobed. Style from between the lobes. Fruit splitting into 4 achenes.*

3. LABIATÆ. Cal. 4-cleft. Cor. coloured. p. 320.

†† *Germen or fruit of one piece or covering, including several seeds. Style terminal.*

4. GENTIANACEÆ. Cal. 4-cleft. Cor. coloured. Stamens shorter than the corolla, alternate with its lobes. Caps. 1-celled, 2-valved at the apex. p. 280.
5. PLANTAGO. Cal. of 4 pieces. Cor. scarious, the segments reflexed. Stam. much longer than the corolla. Caps. 2-celled, bursting all round transversely. p. 353.
6. CENTUNCULUS. Cal. 4-partite. Cor. coloured. Stam. shorter than the corolla, opposite to its lobes. Caps. 1-celled, bursting all round transversely. p. 349.

*** *Perianth double. Cor. of 4 petals.*

7. EPIMEDIUM. Cal. of 4 leaves. Pet. inferior, with an inflated nectary on the upper side. Stam. opposite to the petals. p. 14.
8. CRUCIFERÆ. Cal. of 4 leaves. Pet. inferior, without a nectary. Stam. opposite to the petals. p. 21.
9. EUONYMUS. Cal. 4-cleft, with a flat disk lining the base inside.

¹ In some of the genera, especially *Galium*, the calyx forms so small a rim or margin to the germen as to be scarcely visible, its tubular part being incorporated with the germen.

Petals perigynous, inserted into the margin of the disk.

Stam. alternate with the petals. Germen 3—4-celled. p. 92.

10. CORNUS. Cal. of 4 teeth. Pet. without a nectary, superior. Germen 2-celled. p. 190.

**** *Perianth single.*

11. MAIANTHEMUM. Perianth inferior, petaloid, 4-partite. Stamens inserted into the base of the segments of the perianth, and opposite to them. Germen 2-celled.—Leaves alternate, parallel-veined, without stipules. p. 449.
12. PARIETARIA. Perianth inferior, 4-cleft, campanulate. Stam. inserted upon the lobes of the perianth and opposite to its segments. Fruit 1-seeded.—Leaves netted-veined, with minute stipules. p. 391.
13. ALCHEMILLA. Perianth inferior, 8-cleft, the four alternate and outer segments the smallest. Stam. inserted into the mouth of the perianth, alternate with its larger lobes. Germen 1-seeded.—Leaves alternate, with conspicuous stipules adhering to their petiole. p. 132.
14. SANGUISORBA. Perianth inferior, 4-lobed, with 4 scales or bracteas at the base. Stam. inserted into the mouth of the perianth, opposite to its lobes. Germen 1-seeded.—Leaves alternate, with conspicuous stipules adhering to their petiole. p. 133.
15. ISNARDIA. Perianth superior, its limb 4-partite. Stamens inserted at the bottom of the limb of the perianth, and opposite to its leaves. Germen 4-celled. Capsule many-seeded.—Leaves opposite, without stipules. p. 145.
16. THESIUM. Perianth superior, the limb 4-cleft. Stamens inserted at the base of the lobes of the perianth, and opposite to them. Germen 1-celled. Fruit drupaceous, 1-seeded. p. 379.

Ord. II. DIGYNIA. 2 styles.

* *Perianth double. Leaves opposite or none.*

17. BUFFONIA. Cal. of 4 leaves. Cor. of 4 petals.—Leaves opposite. p. 64.
18. GENTIANA. Cal. 4-cleft. Cor. monopetalous, 4-cleft. Capsule 1-celled, many-seeded, 2-valved at the apex.—Leaves opposite. p. 282.
19. CUSCUTA. Cal. 4-cleft. Cor. monopetalous, 4-cleft. Capsule 2-celled, 4-seeded, opening transversely.—Leaves wanting. p. 286.

** *Perianth single. Leaves alternate with adnate stipules.*

20. ALCHEMILLA. Perianth 8-cleft; stamens alternate with its inner lobes. p. 132.
21. SANGUISORBA. Perianth 4-cleft; stamens opposite to its lobes. p. 133

Ord. III. TETRAGYNIA. 4 styles.

22. CARYOPHYLLACEÆ. Cal. of 4 leaves. Pet. 4, or none. Filaments conspicuous. Caps. 1-celled, several-seeded.— Leaves opposite. p. 54.
23. RADIOLA. Cal. of 4 leaves, united up to their middle, each mostly 3-cleft. Pet. 4. Caps. of 8 cells, 8 valves, and 8 seeds. p. 75.
24. TILLÆA. Cal. of 4 leaves. Pet. 4. Capsules 4. p. 154.
25. ILEX. Cal. 4-toothed. Cor. rotate, 4-cleft. Stigmas 4, sessile. Fruit fleshy, including 4 1-seeded stony nuts. p. 278.
26. POTAMOGETON. Perianth single of 4 scales. Anthers sessile. Pistils 4. Achenes 4, sessile. p. 478.
27. RUPPIA. Perianth 0. Pistils 4. Achenes 4, pedicellate. p. 485.

CLASS V. PENTANDRIA. 5 stamens.

Order I. MONOGYNIA. 1 style.

* *Perianth double, inferior. Cor. monopetalous. Germen deeply 4-lobed : style from between its lobes. Fruit splitting into 4 achenes.*

1. BORAGINACEÆ. p. 288.

** *Perianth double, inferior. Cor. monopetalous. Germen or fruit of one piece or covering, including several seeds : style terminal.*

† *Stamens opposite to the segments of the corolla.*

2. PRIMULACEÆ. Germen and caps. 1-celled, with several seeds upon a globular free central placenta. p. 343.

†† *Stamens alternate with the lobes of the corolla.*

3. GENTIANACEÆ. Germen and caps. 1-celled, with several parietal seeds. Anthers straight. p. 280.
4. ERYTHRÆA. Germen and caps. 2-celled, linear, many-seeded. Anthers at length spirally twisted. p. 281.
5. SOLANACEÆ. Germen and fruit 2- or half 4-celled, many-seeded. Stamens upon the cor. : fil. glabrous : anthers straight. p. 297.
6. VERBASCUM. Germen and capsule 2-celled, many-seeded. Stam. upon the cor. : fil. all or 3 of them hairy : anthers straight. p. 318.
7. CONVOLVULACEÆ. Germen 1—2-celled, with 4 seeds at its base. Caps. 1—2-celled, 2—4-seeded. Cor. campanulate, plaited in bud. Stam. upon the corolla : anthers straight. Stigmas 2. p. 285.

8. **POLEMONIUM.** Germen and caps. 3-celled, 3-valved. Cor. rotate. Stam. upon the mouth of the corolla: anthers straight. Stigmas 3. p. 285.
9. **AZALEA.** Germen and caps. 2—3-celled, many-seeded. Cor. shortly campanulate. Stam. free, or nearly so, from the corolla: anthers straight. p. 273.
10. **VINCA.** Fruit of 2 erect follicles. Cor. salver-shaped, the segments spirally imbricate in bud. Stam. upon the corolla: anthers straight. p. 279.

*** *Perianth double, wholly or half superior. Cor. monopetalous.*

† *Stam. opposite the lobes of the cor. and inserted upon its tube.*

11. **SAMOLUS.** Cor. with 5 scales (imperfect stamens) alternate with its lobes. p. 350.

†† *Stamens alternate with the lobes of the cor., and free from it.*

12. **LOBELIA.** Style glabrous, with a ring of hairs below the stigma. Cor. irregular, cleft on the upper side. Anthers united, dissimilar. p. 266.
13. **CAMPANULACEÆ.** Style pubescent above the middle, without a ring of hairs below the stigma. p. 262.

††† *Stamens alternate with the lobes of the cor., and inserted upon it.*

14. **CAPRIFOLIACEÆ.** Cor. irregular (**LONICERA**), or regular (**VIBURNUM**). p. 191.

**** *Perianth double inferior. Cor. of several petals.*

† *Flowers regular. Stamens distant. Fruit without a beak.*

15. **RHAMNUS.** Cal. urceolate, 5-cleft. Pet. 5, small. Stam. opposite to the petals. p. 93.
16. **EUONYMUS.** Cal. flat, 5-cleft, having a flat disk within. Pet. roundish. Stam. alternate with the petals, inserted upon the disk. Styles united from the base upwards. Caps. 3—5-celled, several-seeded.—Shrubs, without membranous stipules. p. 92.
17. **STAPHYLEA.** Cal. 5-cleft with a conspicuous disk within. Pet. oblong. Stam. alternate, with the petals inserted under the margin of the disk. Styles 2, free at the base, united at the apex. Ovaries 2, each 1-celled. p. 91.
18. **PARONYCHIACEÆ.** Cal. of 5 leaves, without a flat disk. Petals reduced to mere subulate scales or filaments. Stam. alternate with the petals. Fruit (minute) 1-seeded.—Herbaceous plants, with membranous stipules. p. 150.

†† *Flowers regular. Stamens conniving into a tube. Fruit with a long beak.*

19. **GERANIACEÆ.** p. 83.

††† *Flowers very irregular, with a spur.*

20. IMPATIENS. Cal. and cor. together, composed of 6 pieces, two outer and lateral ones deciduous. Germen 5-celled. Caps. of 5 elastic valves. p. 87.
21. VIOLA. Cal. of 5 leaves, extended at the base, persistent Pet. 5. Germen 1-celled. Caps. 3-valved. p. 46.

***** *Perianth double, superior. Cor. of 5 petals.*

22. RIBES. Cal. 5-cleft, bearing the petals and the stamens. Style divided. Germen and berry 1-celled, many-seeded. p. 158.
23. HEDERA. Cal. 5-toothed. Pet. and stam. inserted at the top of the germen. Germen 5-celled. Berry 3—5-seeded. p. 190.
24. CORNUS. Cal. 5-toothed. Pct. and stam. inserted at the top of the germen. Germen 2-celled. Ovules solitary in each cell. p. 190.

***** *Perianth single.*

25. GLAUX. Perianth inferior, campanulate, coloured, of 1 piece, 5-cleft. Stamens alternate with its lobes. p. 346
26. PARONYCHIACEÆ. Perianth inferior, of 5-leaves. Stam. opposite to the leaves of the perianth, with 5 alternating subulate scales or filaments. p. 150.
27. CHENOPODIACEÆ. Perianth inferior, deeply 5-cleft. Stam. opposite to the segments of the perianth, without alternating filaments. Style 2—3-partite. p. 358.
28. THESIMUM. Perianth superior. Stam. opposite to the lobes of the perianth. p. 379.

Ord. II. DIGYNIA. 2 styles.

* *Perianth double, inferior. Cor monopetalous.*

29. GENTIANACEÆ. Germen 1-celled, many-seeded. Caps. 2-valved.—Leaves opposite. p. 280.
30. CUSCUTA. Germen 2-celled, 4-seeded. Caps. bursting all round transversely at the base, 2-celled, with the cells 2-seeded.—Parasitical leafless plants with filiform twining stems. p. 286.

** *Perianth double, superior. Pet. 5. Seeds 2.¹*

31. UMBELLIFERÆ. p. 165.

*** *Perianth inferior. Pet. 5 or wanting.*

32. STAPHYLEA. Cal. coloured, 5-cleft, with an urecolate disk at the base. Pet. 5, as long as the calyx. Caps. membranous, with several bony seeds.—Shrubs, with compound leaves and deciduous stipules. p. 91.

¹ In this division so much of the calyx is incorporated with the germen, and so minute are the segments or free portion of the limb, that at first sight, as in *Rubiaceæ* belonging to Cl. IV. Ord. I., it would appear as if there were no calyx.

33. **PARONYCHIACEÆ.** Cal. of 5 leaves. Pet. resembling sterile filaments or scales. Fruit 1-seeded, not winged.—Herbaceous plants. Leaves opposite, with membranous stipules. p. 150.
34. **SCLERANTHUS.** Perianth single, urceolate, contracted at the mouth. Stam. upon the throat of the perianth. Fruit 1-seeded, covered by the hardened perianth, not winged.—Leaves opposite, without stipules. p. 368.
35. **CHENOPODIACEÆ.** Perianth single, herbaceous, 5-cleft or 5-parted. Stam. inserted into the base of the perianth. Fruit covered by the perianth, 1-seeded, not winged.—Stipules none. p. 358.
36. **POLYGONUM.** Perianth single, coloured, 5-parted. Stam. inserted at the base of the perianth. Achene 1-seeded, wingless.—Herbaceous plants, with alternate leaves and sheathing stipules. p. 369.
37. **ULMUS.** Perianth single, 4—6-cleft. Fruit longer than the perianth, compressed, winged all round (*a samara*), 1-seeded.—Trees, with alternate leaves and minute stipules. p. 392.

Ord. III. TRIGYNIA. 3 styles.

* *Flowers superior. Cor. monopetalous, 5-lobed.*

38. **VIBURNUM.** Berry usually 1-seeded.—Leaves simple. p. 192.
39. **SAMBUCUS.** Berry 3—4-seeded.—Leaves pinnate. p. 192.

** *Flowers inferior.*† *Perianth double. Petals 5.*

40. **TAMARIX.** Stigmas sessile, feathery. Caps. 1-celled, 3-valved, with many comose seeds. p. 149.
41. **PARONYCHIACEÆ.** Fruit with one naked seed.—Leaves with membranous stipules. (*CORRIGIOLA* and *POLYCARPON*.) p. 150.
42. **CARYOPHYLLACEÆ.** Caps. 1-celled, with several naked seeds.—Leaves naked without stipules. (*STELLARIA* and *HOLOSTEUM*.) p. 54.
43. **DROSERA.** Styles filiform. Caps. 1-celled, with several naked seeds.—Leaves clothed with glandular hairs. p. 50.

†† *Perianth single.*

44. **CHENOPODIACEÆ.** Perianth herbaceous.—Stipules wanting. (*CHENOPODIUM* and *SUÆDA*.) p. 358.
45. **POLYGONUM.** Perianth coloured.—Stipules sheathing. p. 369.

Ord. IV. TETRAGYNIA. 4 styles.

46. **PARNASSIA.** Cal. deeply 5-cleft. Petals 5. Nectarics 5, heart-shaped, fringed with globular-headed filaments. Stigmas ses-

sile. Capsule 1-celled, 4-valved, each valve bearing a longitudinal linear receptacle with numerous seeds.—Leaves naked.
p. 51.

47. DROSERA. Styles elongate.—Leaves with glandular hairs.
p. 50.

Ord. V. PENTAGYNIA. 5 styles.

* *Stamens inserted upon the base of the petals. Cal. of 1 piece.*

48. PLUMBAGINACEÆ. Cal. funnel-shaped, plaited, dry and membranous. Pet. 5, united at the base, bearing the stamens. Caps. 1-seeded, invested by the calyx. p. 350.

** *Stam. inserted upon the receptacle, free from the cal. and petals.
Cal. of 5 leaves or 5-partite.*

49. LINUM. Pet. 5, entire. Germen and caps. globose, mucronate, with 10 valves, 10 cells, and 10 seeds. p. 74.
50. SPERGULA. Pet. 5, entire. Germen and caps. 1-celled, many-seeded. p. 154.
51. CERASTIUM. Pet. 5, bifid. Germen and caps. 1-celled, many-seeded. p. 71.

*** *Stam. and petals inserted upon the calyx.*

52. SIBBALDIA. Cal. in 10 alternately large and small segments. Achens 5, in the bottom of the calyx. p. 132.

Ord. VI. HEXA-OCTO-GYNIA. 6 or 8 styles.

53. DROSERA. Cal. 5-cleft. Pet. 5. Caps. 1-celled, 3-valved, many-seeded.—Leaves clothed with glandular hairs. p. 50.

Ord. VII. POLYGYNIA. Many styles.

54. RANUNCULACEÆ. Stam. inserted upon the receptacle, free from the calyx. Cal. leaves distinct. p. 3.
55. SIBBALDIA. Stam. inserted upon the calyx. Cal. 10-cleft. p. 132.

CLASS VI. HEXANDRIA. 6 stamens, equal in height, or 3 longer than the others.

Order I. MONOGYNIA. 1 style.

* *Flowers complete, having a double perianth (Cal. and Cor.). Dicotyledonous plants. Leaves netted-veined.*

1. BERBERIS. Cal. of 6 deciduous leaves. Pet. 6, each with 2 glands at the base. Berry 2—3-seeded. p. 14.

2. FRANKENIA. Cal. of 1 piece, tubular. Pet. 5, free from the calyx. Stamens mostly alternate with the petals. Caps. 1-celled, many-seeded. p. 53.
3. LYTHRACEÆ. Cal. of 1 piece. Pet. 6, inserted upon the calyx. Stam. alternate with the petals. p. 147.
4. PRIMULACEÆ. Cor. monopetalous, rotate, 6-partite, with the stamens inserted on it and opposite to its lobes.—(TRIEN-
TALIS and LYSIMACHIA.) p. 343.

** *Perianth single, superior, petaloid. Monocotyledonous plants.*
Leaves parallel-veined.

5. AMARYLLIDACEÆ. Flowers from a spathe, but not upon a spadix. p. 443.

*** *Perianth single, inferior.*

† *Stipules none.*

6. ACORUS. Flowers arranged closely upon a thick spadix. Perianth of 6 coloured scales. p. 476.
7. LILIACEÆ. Flowers not upon a spadix. Perianth petaloid, deciduous or marcescent, never coriaceous or hard when withered. p. 446.
8. GAGEA. Flowers corymbose, not upon a spadix. Perianth of 6 persistent coloured (yellow) leaves. Stam. glabrous. Anthers erect. p. 456.
9. NARTHECIUM. Flowers racemose, not upon a spadix. Perianth of 6 persistent (yellow) leaves, somewhat coriaceous and ultimately hardened. Filaments woolly. Seeds with an appendage at each end. p. 468.
10. JUNCACEÆ. Flowers not upon a spadix. Perianth dry and glumaceous, of 6 pieces. p. 460.
11. PEPLIS. Flowers axillary, not upon a spadix. Perianth herbaceous, campanulate, with 6 large and 6 small teeth.—Dicotyledonous plants with opposite leaves. p. 148.

†† *Leaves with sheathing stipules. Dicotyledonous plants. Leaves netted-veined.*

12. POLYGONUM. Flowers not upon a spadix. Perianth coloured, 5-partite.—Leaves alternate. p. 369.

Ord. II. DIGYNIA. 2 styles.

13. OXYRIA. Perianth single, of 4 leaves. Achene with a broad membranous margin. p. 377.
14. POLYGONUM. Perianth single, 5-partite. Achene wingless. p. 369.

Ord. III. TRIGYNIA. 3 styles.

- * *Perianth single. Leaves verticillate, netted-veined, without stipules.*
15. PARIS. Perianth of 6 leaves, the three inner subulate. Anthers on the side of the filament. Stigmas simple. p. 446.

** *Perianth single. Leaves alternate, netted-veined, with sheathing stipules.*

16. RUMEX. Perianth of 6 leaves, the three inner afterwards enlarged. Stigmas multifid. p. 373.

17. POLYGONUM. Perianth 5-partite, segments similar. p. 369.

*** *Perianth single. Leaves alternate, or all radical, simple-veined, without stipules.*

18. TOFIELDIA. Perianth 6-parted with a small 3-partite involucre. Styles short. Caps. 3—6, united up to the middle, many-seeded. p. 458.

19. SCHEUCHZERIA. Perianth of 6 leaves. Anthers elongate. Styles short. Caps. 3, inflated, 2-valved, 1—2-seeded. p. 472.

20. TRIGLOCHIN. Perianth of 6 concave deciduous leaves. Anthers lodged in the leaves of the perianth. Styles very short. Caps. 3—6, 1-seeded, united by a longitudinal column, from which they usually separate at the base. p. 472.

21. COLCHICUM. Perianth funnel-shaped, very long; limb campanulate, 6-parted. petaloid. Styles very long. Caps. 3, united at the base. p. 458.

**** *Perianth double.*

22. ELATINE. Cal. of 3 sepals, herbaceous. Pet. 3, coloured. Anthers terminal.—Leaves cauline, opposite, naked. p. 53.

23. DROSERA. Cal. of 6 sepals. Pet. 6.—Leaves radical, clothed with glandular hairs. p. 50.

Ord. IV. HEXA-OCTO-GYNIA. 6 or 8 styles.

24. DROSERA. Cal. and cor. each of 6 pieces, germen solitary.—Leaves with glandular hairs. p. 50.

25. ACTINOCARPUS. Perianth of 6 pieces. Germens and fruits combined at the base, spreading in a radiated manner, 2-seeded.—Leaves naked. p. 470.

Ord. V. POLYGYNIA. Many styles.

26. ALISMA. Achenes many, distinct, aggregate upon the receptacle, 1-seeded. p. 470.

CLASS VII. HEPTANDRIA. 7 stamens.

Order I. MONO-DI-TRI-GYNIA. 1, 2, or 3 styles.

1. PRIMULACEÆ. Perianth double. Cor. monopetalous. Stam. opposite to the divisions of the corolla. Style 1.—Stipules 0. (TRIENTALIS and LYSIMACHIA.) p. 343.

2. POLYGONUM. Perianth single, 5-partite. Styles 2—3, distinct or united to the middle.—Stipules sheathing. p. 369.

CLASS VIII. OCTANDRIA. 8 *stamens*.Order I. MONOGYNIA. 1 *style*.* *Perianth double, inferior.*

1. ACER. Cal. 5-cleft. Pet. 5. Germen 2-lobed, 2-seeded. Caps. 2, united at the base; each with a long winged membrane (*samara*), 1—2-seeded. p. 83.
2. CHLORA. Cal. of 8 segments, in a single row. Cor. of 1 piece, nearly rotate; the stamens alternate with its lobes. Germen 1-celled. Stigma 2—4-cleft. Caps. many-seeded. p. 284.
3. PRIMULACEÆ. Cal. 8-partite, in a single row. Cor. monopetalous, rotate, 8-partite, with the stamens inserted on and opposite to its lobes.—(TRIENTALIS and LYSIMACHIA.) p. 343.
4. MONOTROPA. Cal. and cor. of 4 pieces each. Germen 4-celled, many-seeded.—Leaves none. p. 277.
5. ERICACEÆ. Cal. of 4 leaves or deeply 4-cleft, sometimes with 4 similar outer pieces. Cor. of one piece. Stigma entire. Germen 4-celled. p. 269.

** *Perianth double, superior.*

6. VACCINIUM. Co of one piece, 4-cleft. p. 267.
7. ONAGRACEÆ. Petals 4. p. 141.

*** *Perianth single, inferior.*

- 8 DAPHNE. Perianth usually coloured, 4-cleft, bearing the stamens. Style undivided. Germen 1-seeded.—Stipules 0. p. 378.
9. MONOTROPA. Perianth of 4 pieces, with as many external alternating bracteas. Stam. free from the perianth. Germen 4-celled, many-seeded.—Leaves none. p. 277.
10. POLYGONUM. Perianth 5-parted. Style 2—3-cleft. Germen 1-seeded.—Stipules sheathing. p. 369.

Ord. II. DIGYNIA. 2 *styles*.

11. POLYGONUM. Perianth single, inferior, coloured, 5-parted. Germen 1-seeded.—Leaves alternate, with sheathing stipules. p. 369.
12. SCLERANTHUS. Perianth single, inferior, urceolate, contracted at the mouth; tube hard and coriaceous; limb 4-cleft. Germen 1-seeded.—Leaves opposite without stipules. p. 368.
13. CHRYSOSPENIUM. Perianth single, half-superior, spreading. Germen many-seeded.—Leaves without stipules. p. 164.

Ord. III. TRIGYNIA. 3 *styles*.

14. POLYGONUM. Perianth single, inferior, in 5 deep, coloured, persistent segments. Fruit a 1-seeded achene. p. 369.
15. DROSERA. Perianth double. Fruit many-seeded. p. 50.

Ord. IV. TETRA-HEXA-OCTO-GYNIA. 4, 6, or 8 *style*.

16. PARIS. Perianth inferior, of 8 leaves; 4 inner very narrow. Cells of the anthers 2, fixed one on each side of the middle of a subulate filament. Berry 4-celled. p. 446.
17. ADOXA. Cal. half-superior, 3-cleft. Cor. 4-cleft. Anthers terminal, 1-celled. Berry 4-celled. p. 189.
18. ELATINE. Cal. inferior, of 4 pieces. Pet. 4. Germen 4-celled. Caps. 4-valved. p. 53.
19. MENCHIA. Cal. inferior, of 4 pieces. Pet. 4. Germen 1-celled. Caps. opening by 8 teeth at the top.—Leaves naked. p. 70.
20. DROSERA. Cal. inferior, of 8 pieces. Pet. 4. Germen 1-celled. —Leaves clothed with glandular hairs. p. 50.

CLASS IX. ENNEANDRIA. 9 *stamens*.Order I. MONOGYNIA. 1 *style*.

1. PRIMULACEÆ. Perianth double. Cal. 9-parted. Cor. rotate, 9-parted. Caps. 1-celled, several-seeded. p. 343.

Ord. II. HEXAGYNIA. 6 *styles*.

2. BUTOMUS. Perianth single, coloured, 6-parted, inferior. Caps. 6, many-seeded. p. 469.

CLASS X. DECANDRIA. 10 *stamens*.Order I. MONOGYNIA. 1 *style*.

* *Germen superior*.

† *Fruit with a long beak, its cells 1-seeded. Stam. conniving into a tube.*

1. GERANIUM. Fruit with a long beak. p. 83.

†† *Fruit without a beak, its cells many-seeded. Stam. distant.*

2. MONOTROPA. Perianth single, of 5 leaves, cucullate at the base (petals?), with as many alternating bracteas (eal.-leaves?). Anthers 1-celled, 2-lipped.—Leaves none. p. 277.
3. PYROLACEÆ. Cal. 5-cleft. Pet. 5, sometimes connected at the base. Anthers opening with 2 pores. Seeds chaffy. —Leaves mostly radical. p. 275.

4. ERICACEÆ. Cal. deeply 5-cleft. Cor. of 1 piece, ovate or campanulate, 5-cleft. Seeds not chaffy.—Shrubby, leafy plants. p. 269.

** *Germen inferior.*

5. VACCINIUM. Cor. of 1 piece. p. 267.

Ord. II. DIGYNIA. 2 styles.

* *Perianth single.*

6. POLYGONUM. Perianth inferior, 5-parted, coloured. Germen 1-seeded.—Leaves alternate with sheathing stipules. p. 369.
 7. SCLERANTHUS. Perianth inferior, of 1 piece, contracted at the mouth; limb 5-cleft. Germen 1-seeded.—Leaves opposite, without stipules. p. 368.
 8. CHRYSOSPLENIUM. Perianth half-superior, limb somewhat coloured, 5-cleft. Germen many-seeded. Caps. with 2 beaks. p. 164.

** *Perianth double. Petals 5.*

9. SAXIFRAGA. Cal. superior, or inferior, or half-superior, in 5 segments. Pet. sessile. Caps. sessile, with 2 beaks, 2-celled. p. 160.
 10. CARYOPHYLLACEÆ. Cal. inferior, of 1 piece, 5-toothed. Pet. with long claws. Caps. stalked. p. 54.

Ord. III. TRI-TETRA-GYNIA. 3 (or sometimes 4) styles.

11. POLYGONUM. Perianth single, petaloid. Germen sessile, 1-seeded, triquetrous.—Leaves alternate, with sheathing stipules. p. 369.
 12. CARYOPHYLLACEÆ. § SILENEÆ. Perianth double. Cal. of 1 piece, 5-toothed. Germen stalked, many-seeded.—Leaves opposite, without stipules. pp. 55, 56.
 13. CARYOPHYLLACEÆ. § ALSINEÆ. Perianth single or double. Cal. 5-parted. Germen sessile, many-seeded.—Leaves opposite, without stipules. pp. 55, 62.
 14. SPERGULARIA. Perianth double. Cal. 5-parted. Germen sessile, many-seeded.—Leaves opposite, with membranaceous stipules. p. 153.

Ord. IV. PENTA-DECA-GYNIA. 5 (or sometimes 10) styles.

* *Germens superior, distinct, 5—10 in each flower.*

15. SIBBALDIA. Cal. in 10 alternately large and small segments. Pet. 5, and the stam. inserted into the mouth of the calyx. Achenes 5—10, without a gland at their base.—Stipules adhering to the petiole. p. 132.

16. COTYLEDON. Cal. 5-parted. Cor. of 1 piece, tubular, 5-cleft, inserted at the base of the germens. Caps. 5, each with a nectariferous scale or gland at its base.—Stipules none. p. 155.
17. SEDUM. Cal. in 5 (sometimes 4—8) deep segments, often resembling the leaves. Pet. 5, patent, inserted at the base of the germens. Caps. 5, each with a nectariferous scale at its base.—Stipules none. p. 155.

**** *Germen superior, solitary in each flower.***

18. PARIS. Perianth of 10 leaves; 5 inner ones very narrow. Anther-cells attached near the middle of the filament. Germen 5-celled. p. 446.
19. OXALIS. Cal. 5-parted. Pet. 5, often united by the bases of their claws. Anthers terminal. Germen 5-celled. Seeds with an elastic skin.—Leaves alternate. p. 88.
20. SPERGULA. Cal. 5-leaved, Pet. 5. Germen 1-celled.—Leaves opposite, with membranous stipules. p. 154.
21. CARYOPHYLLACEÆ. § ALSINEÆ. Cal. 5-leaved. Germ. 1-celled.—Leaves opposite, without stipules. pp. 55, 62.
22. CARYOPHYLLACEÆ. § SILENEÆ. Cal. monophyllous, with 5 teeth. Pet. clawed.—Leaves opposite without stipules. pp. 55, 56.

***** *Germen inferior.***

23. ADOXA. Perianth double. Anthers 1-celled. p. 189.

CLASS XI. DODECANDRIA. 12 (to 18) *stamens*.

Order I. MONOGYNIA. 1 *style*.

1. ASARUM. Perianth single, 3-cleft, superior. p. 380.
2. LYTHRUM. Cal. inferior, tubular, with 12 teeth alternately smaller. Pet. 6, inserted upon the calyx. p. 144.

Ord. II. DIGYNIA. 2 *styles*.

3. AGRIMONIA. Cal. turbinate, covered with hooked bristles, 5-cleft, inferior. Pet. 5, inserted upon the calyx. p. 134.

Ord. III. TRIGYNIA. 3 *styles*.

4. RESEDA. Cal. 4—6 parted. Pet. more or less divided and unequal. Styles entire. Caps. of 1 cell, open at the top, with many seeds attached to its wall. p. 44.
5. EUPHORBIA. Perianth (a true involucre) single, campanulate. Styles bifid. Caps. 3-celled, with 3 seeds attached to the axis. p. 383.

Ord. IV. DODECAGYNIA. *Styles variable, 4—12 or more.*

6. SEMPERVIVUM. Cal. inferior, 12-cleft. Pet. 12, entire, regular. Caps. 12, distinct.—Stipules none. p. 155.
7. POTENTILLA. Cal. inferior, 8—10-cleft, the segments alternately smaller. Pet. 4—5, entire or notched, regular, and the stamens inserted upon the calyx. Achenes 4—18, distinct.—Leaves with stipules adhering to the petiole. p. 129.
8. RANUNCULUS. Cal. inferior, 5-cleft. Pet. 5, regular, and the stam. inserted on the receptacle. Achenes many, distinct. p. 7.
9. STRATIOTES. Perianth superior, 6-parted; 3 outer segments herbaceous, 3 inner petaloid. Germ. 6-celled. p. 425.

CLASS XII. ICOSANDRIA. *20 or more stamens placed on the calyx.*

1. ROSACEÆ. Flowers regular. Cal. 4—5- or 8—10-cleft.—Leaves with stipules. p. 117.
2. STRATIOTES. Perianth 6-parted, regular; 3 outer segments herbaceous, 3 inner petaloid. Germen inferior, 6-celled.—Floating plants. p. 425.

CLASS XIII. POLYANDRIA. *Many stamens inserted upon the receptacle (free from the calyx and petals).*Ord. I. MONOGYNIA. *1 style.** *Flowers irregular.*

1. DELPHINIUM. Cal. coloured, upper leaflet produced at the base into a spur. Pet. 4; 2 upper ones with appendages included within the spur. p. 13.

** *Flowers regular. Petals 4.*

2. PAPAVERACEÆ. Cal. of 2 caducous leaves. Fruit a capsule or pod. p. 16.
3. ACTÆA. Cal. of 4 caducous leaves. Berry 1-celled. p. 13.

*** *Flowers regular. Petals 5.*

4. HELIANTHEMUM. Cal. of 3 equal leaves, or 5 of which 2 are exterior and smaller; larger ones twisted in bud. p. 45.
5. TILIA. Cal. 5-partite; its leaves similar, valvate in bud. p. 78.

**** *Flowers regular. Petals numerous.*

6. NYMPHÆACEÆ. p. 15.

Ord. II. PENTAGYNIA. *Styles variable, 2—9.*

7. STRATIOTES.¹ Germen inferior, 6-celled. p. 425.
8. RESEDA. Flowers irregular. Germen superior, solitary, 1-celled, soon open at the top between the short styles. Seeds attached to 3—4 parietal receptacles. p. 44.
9. HYPERICUM. Flowers regular. Germen superior, solitary, closed at the top.—Leaves opposite. p. 79.
10. RANUNCULACEÆ. Germens superior, several (3—6), sometimes united below, each 1-celled.—Leaves alternate. p. 3.

Ord. III. POLYGYNIA. *Many styles.*

11. RANUNCULACEÆ. p. 3.
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CLASS XIV. DIDYNAMIA.² *4 stamens; 2 longer than the other two.*Order I. GYMnosPERMIA.³ *Germen or fruit deeply 4-lobed, or apparently of 4 naked seeds. Style from between the lobes.*

1. LABIATÆ. p. 320.

Ord. II. ANGiosPERMIA.⁴ *Germen entire, or slightly 2-lobed, containing several seeds, with a terminal style.*

2. VERBENA. Germen superior, 4-celled, with 1 seed at the base of each cell. Fruit splitting into 4 achenes.⁵ p. 340.
3. LINNÆA. Germen inferior, 3-celled; 2 of the cells with many abortive seeds, one with a perfect seed. Berry dry, 1-seeded. p. 193.
4. OROBANCHACEÆ. Germen and caps. superior, 1-celled. Seeds attached to parietal receptacles.—Leafless plants. p. 299.
5. SCROPHULARIACEÆ. Germen and caps. superior, 2- (or rarely 1-) celled. Seeds several, attached to the axis.—Leafy plants. p. 303.

¹ We retain *Stratiotes* in the Class *Polyandria*, solely because it has been placed there by Linnæus, Smith, and some others; but the inferior germen shows its place to be in *Icosandria*: there are, however, seldom more than 12 stamens with anthers, so that it ought rather to be looked for in *Dodecandria*, and from its being almost always diœcious, Richard long ago removed it to *Diœcia Dodecandria*.

² From *dis*, two, and *δυναμις*, a power, or superiority of two stamens over the other two.

³ From *γυμνος*, naked, and *σπερμα*, the seed.

⁴ From *αγγιον*, a vessel or capsule, and *σπερμα*, the seed.

⁵ This genus is placed by Smith and others in the order *Gymnospermia*. It is sometimes described as having the seeds inclosed in one thin membranous evanescent pellicle or capsule; but although we have not seen such, the terminal style appears to indicate the order *Angiospermia*.

CLASS XV. TETRADYNAMIA.¹ 6 stamens, 4 long and 2 short.

1. CRUCIFERÆ. p. 21.

CLASS XVI. MONADELPHIA.² Filaments combined in one set.³

Order I. TRIANDRIA. 3 stamens.

1. SISYRHYNCIUM. p. 440.

Ord. II. PENTANDRIA. 5 perfect stamens.

2. GERANIACEÆ. Style 1. Fruit beaked, separating at the base into 5 one-seeded capsules, each with a long awn. p. 83.

3. SOLANUM. Style 1. Fruit not beaked, fleshy, 2-celled, many-seeded. p. 298.

4. LYSIMACHIA. Style 1. Fruit 1-celled, not beaked, many-seeded. p. 347.

5. LINUM. Styles 5. Fruit not beaked, 10-valved, 10-seeded. p. 74.

Ord. III. DECANDRIA. 10 stamens.

6. GERANIUM. Cor. of 5 regular petals. Style 1. Fruit beaked, separating at the base into 5 one-seeded capsules, each with a long naked awn. p. 83.

7. OXALIS. Cor. of 5 regular petals. Styles 5. Fruit 5-celled, not beaked. p. 88.

8. LEGUMINOSÆ. Cor. irregular, papilionaceous. Style 1. Legume 1-celled. p. 93.

Ord. IV. POYANDRIA. Many stamens.

9. MALVACEÆ. Cal. double. Anthers 1-celled. p. 75.

CLASS XVII. DIADELPHIA.⁴ Filaments combined in two sets.

Order I. HEXANDRIA. 6 stamens.

1. FUMARIACEÆ. Cal. of 2 small deciduous leaves. Pet. 4, one of them gibbous or spurred at the base. p. 19.

¹ From τετρας, four, and δυναμις, a power, or superiority in length of four over the other two stamens.² From μονος, one, and αδελφος, brotherhood; one united set of stamens.³ In *Erodium* and *Geranium* the union of the filaments takes place only at the very base, and is with difficulty perceived.⁴ From δις, two, and αδελφος, brotherhood; stamens in two sets.

Ord. II. OCTANDRIA. 8 *stamens*.

2. POLYGALA. Cal. of 5 leaves, 2 of them wing-shaped and coloured. Pet. combined by the claws with their filaments, the lower one keeled. Capsule compressed, 2-celled, 2-seeded. p. 52.

Ord. III. DECANDRIA. 10 *stamens*.

3. LEGUMINOSÆ. Flowers papilionaceous, p. 93. -
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CLASS XVIII. POLYADELPHIA.¹ *Filaments combined in more than two sets.*Order I. POLYANDRIA. *Many stamens*.

1. HYPERICUM. Cal. 5-partite or 5-leaved, inferior. Pet. 5. Stam. inserted on the receptacle. p. 79.
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CLASS XIX. SYNGENESIA.² *Anthers united into a tube. Flowers compound (several together on the same receptacle, and within the same involucre).*

1. COMPOSITÆ. p. 204.
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CLASS XX. GYNANDRIA.³ *Stamens situated upon the style or column, above the germen.*Order I. MONANDRIA, *one stamen*; and Ord. II. DIANDRIA, *two stamens*.

1. ORCHIDACEÆ. Perianth 6-partite, irregular. Germen 1-celled.—Leaves simply veined. p. 425.

Ord. III. HEXANDRIA. 6 *stamens*.

2. ARISTOLŒCHIA. Perianth tubular, oblique. Germen 6-celled.—Leaves netted-veined. p. 380.

¹ From πολυς, *many*, and αδελφος; many sets of stamens.

² From συγγενησις, implying union of the anthers.

³ From γυνη and ωνη, implying a union of the stamen and pistil.

CLASS XXI. MONECIA.¹ *Stamens and pistils in separate flowers on the same plant.*

Order I. MONANDRIA. 1 stamen.

1. EUPHORBIA. Involucre of 1 piece, including several barren flowers and 1 fertile. Perianth none, or a very minute one to the fertile flower. Germen 3-lobed. Styles 3, bifid. Caps. 3-seeded. p. 383.
2. CALLITRICHE. Bracteas 2 or none. Perianth none. Germen solitary, 4-lobed, indchiseent, with 4 1-seeded cells. Styles 2, simple. p. 387.
3. ZANNICHELLIA. Involucre, spatha, and spadix none. Perianth of barren fl. none; of fertile single, of 1 leaf. Germens 4 or more, each with 1 undivided style. p. 485.
4. ZOSTERA. Perianth none. Stamens and pistils inserted alternately in 2 rows upon one side of a thin flat spadix inclosed within a foliaceous spatha. Anthers sessile. Style bifid. Fruit dry. p. 486.
5. ARUM. Perianth none. Stamens inserted about the middle, pistils on the lower part of a thick cylindrical spadix which is enveloped by a spatha convolute at the base. Fruit fleshy, many-seeded. p. 475.

Ord. II. DIANDRIA. 2 stamens.

6. CALLITRICHE. Flowers solitary. Fruit naked, 4-lobed, 4-seeded. Styles 2, simple.—Leaves opposite, sessile. p. 387.
7. LEMNA. Spadix 0. Spatha urceolate, membranous, inclosing one barren and one fertile flower. Ovary 4-celled. Style and stigma 1.—Minute, floating, frondose plants. p. 477.
8. CAREX. Flowers in spikes. Fruit 1-seeded, contained within an urceolate membranous perigynium. Style 1, with 2—3 stigmas.—Leaves alternate, sheathing. p. 499.

Ord. III. TRIANDRIA. 3 stamens.

9. CYPERACEÆ. Flowers in spikes, subtended by glumes. Achenes with 1 style and 2—3 stigmas.—Leaves parallel-veined. p. 487.
10. TYPHACEÆ. Flowers in spikes or capitate, without glumes. Pericarps indehiscent, with 1 style and stigma.—Leaves parallel-veined. p. 473.
11. AMARANTHUS. Perianth single, deeply 3-partite. Styles 2—3. Utricle of 1 cell, bursting all round transversely, 1-seeded.—Leaves netted-veined. p. 358.

Ord. IV. TETRANDRIA. 4 stamens.

* *Leaves all radical.*

12. LITTORELLA. Barren fl. solitary, on long radical peduncles.

¹ From *μονος*, one, and *οικος*, a house.

Cal. 4-leaved. Cor. 4-fid, scarious. Stam. much longer than the corolla.—Fertile fl. sessile among the leaves. Fruit 1-celled, 1-seeded. p. 355.

13. *ERIOCAULON*.¹ Flowers collected into a compact, scaly, long-stalked head. Perianth single, diaphanous.—Barren fl. in the centre.—Fertile fl. in the circumference. Caps. 2-celled; cells 1-seeded. p. 459.

** *Stems leafy.*

14. *ALNUS*. Flowers all in cylindrical catkins.—Barren fl.: Scale of the catkin 3-lobed, with 3 flowers. Perianth single, 4-partite.—Fertile fl.: Scale of the catkin subtrifid, with 2 flowers. Perianth 0. Styles 2. Fruit compressed, 2-celled.—Trees. p. 396.
15. *MYRICA*. Flowers all in cylindrical catkins; scales entire, each with a single flower. Perianth none. Germen 1-celled, 1-seeded. Styles 2. Fruit globose.—Shrubs. p. 395.
16. *BUXUS*. Flowers clustered, axillary. Perianth single, of 4 leaves, 2 opposite ones smaller, with 1—3 bractes at the base. Styles 3. Caps. with 3 beaks, 3-celled, 6-seeded.—Trees or shrubs. p. 386.
17. *PARIETARIA*. Flowers clustered, axillary. Perianth single, campanulate or tubular, 4-cleft. Style simple. Stigma penicillate. Achene 1-seeded.—Herbaceous plants with leafy stems. p. 391.
18. *URTICA*. Flowers in spikes or clustered. Perianth single, of the barren flowers 4-leaved, of the fertile 2-leaved. Stigma sessile. Achene 1-seeded.—Herbaceous plants with leafy stems. p. 390.

Ord. V. *PENTANDRIA*. 5 *stamens*.

19. *XANTHIUM*. Barren fl.: Involucre of few scales, with many small capitate flowers seated upon a common receptacle. Perianth single, obovate, 5-toothed. Anthers terminating a tube, which is inserted into the base of the perianth.—Fertile fl.: Involucre of 1 piece, prickly, 2-beaked, entirely inclosing two 1-seeded pistils, without a perianth. p. 261.
20. *ATRIPLEX*. Perianth single, herbaceous, of the barren flowers 5-partite, of some or all the fertile 2-leaved. Style 2. Utricle superior, indehiscent, 1-seeded. p. 362.

Ord. VI. *POLYANDRIA*. 6 *stamens or more*.

* *Flowers not in catkins.*

† *Flowers destitute of spatha and spadix.*

‡ *Stipules none.*

21. *CERATOPHYLLUM*. Flowers axillary. Perianth (an involucre?)

¹ Usually placed in *Monœcia Hexandria*, but the only British species has 4 stamens, and the other parts of the flower are in a binary ($\frac{1}{2}$ or $2n$), not ternary ($\frac{1}{3}$ or $3n$), proportion.

single, multipartite. Stam. 16—20. Germen 1, superior. Style filiform and stigma simple. Fruit indehiscent, 1-seeded. p. 388.

22. MYRIOPHYLLUM. Flowers axillary or in a lax spike. Cal. of 4 leaves. Pet. 4, deciduous. Stam. 8. Germen inferior. Stigmas 4, sessile. Fruit splitting into 4 achenes. p. 147.
23. SAGITTARIA. Flowers solitary, peduncled. Perianth of 6 leaves; 3 outer herbaceous, 3 inner petaloid. Stam. numerous. Germens superior, very numerous, collected into a head, each with one style and stigma. p. 471.

†† *Leaves with stipules adhering to the petiole.*

24. POTERIUM. Flowers collected into a head, upper ones fertile. Perianth single. Stam. numerous. Filaments very long, flaccid. Stigmas penicillate. Achenes 2, invested with the hardened perianth. p. 133.

†† *Flowers with a spatha and spadix.*

25. ARUM. Spatha of 1 leaf, convolute at the base. Spadix thick, naked above, with germens at its base and sessile stamens near the middle. Berry 1-celled, many-seeded. p. 475.

** *Barren flowers in catkins or lax spikes.*

26. CUPULIFERÆ. Fertile fl. solitary or aggregate or spiked. Fruit solitary, or several together within a coriaceous or leafy involucre, not winged. p. 415.
27. BETULA. Fertile flowers in cylindrical catkins. Germen and fruit compressed, winged, not contained within an involucre. p. 395.

Ord. VII. MONADELPHIA. *Stamens united in one set.*

28. XANTHIUM. Barren fl. capitate, seated upon a common receptacle. Perianth single, 5-toothed. — Fert. fl.: Involucre of 1 piece, prickly, 2-beaked, inclosing 2 1-seeded pistils without a perianth. Stigmas protruded. — Leaves netted-veined. p. 261.
29. PINUS. Perianth 0. — Barren fl. in crowded racemose catkins; the scales peltate, bearing 2 sessile anthers. — Fertile fl. in an ovate catkin; its scales closely imbricate, 2-flowered, afterwards hardened. Style and stigma 0. Pericarp none (except the scales of the cone). Leaves parallel-veined. p. 419.
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CLASS XXII. DICECIA.¹ *Stamens and pistils in separate flowers and on different plants.*

Order I. MONANDRIA. 1 stamen.

1. NAJAS. Barren fl. within a spatha. Germen with 1 seed.
—Leaves simple-veined. p. 486.
2. SALIX. Spatha none. Germen with many seeds.—Leaves netted-veined. p. 397.

Ord. II. DIANDEIA. 2 stamens.

3. SALIX. Scales of the catkin single-flowered, imbricate, with 1—2 nectariferous glands at the base. Perianth 0. Stigmas 2, often cleft. Caps. 1-celled, 2-valved, many-seeded. Seeds comose. p. 397.

Ord. III. TRI-TETR-PENT-ANDRIA. 3, 4, or 5 stamens.

* *Sterile flowers not in catkins, or with a perianth besides the scale of the catkin.*

4. VALERIANA. Cor. monopetalous. Stamens 3, upon the corolla. Germen inferior. Style 1. Stigma 3-fid. Fruit dry, 1-seeded, crowned with the calyx expanded into a pappus. p. 200.
5. EMPETRUM. Perianth and bracteas of many imbricating scales, of which the 3 inner are often regular, spreading, and petaloid. Filaments 3, long, inserted under the germen. Germen superior, globose. Style short. Stigma dilated, peltate, rayed. Fruit fleshy, 6—9-seeded. p. 381.
6. RUSCUS. Perianth single, of 6 leaves. Filaments combined into a tube, bearing 3 sessile reniform anthers at the summit. Style 1, surrounded by a tubular nectary. Stigma 1. Germen superior, 3-celled, 6-seeded. Fruit fleshy. p. 448.
7. HIPPOPHAE. Barren fl. collected into a small sort of catkin, each scale bearing a flower. Perianth single, of 2 roundish nearly distinct pieces. Anthers 3, linear, sessile.—Fertile fl. solitary. Perianth single, tubular, cloven at the summit. Germen superior. p. 394.
8. VISCUM. Cal. obsolete. Pet. 4, of barren fl. ovate, fleshy, united at the base, and bearing each a single anther, adnate with the upper surface; of fertile fl. very minute. Germen inferior. p. 191.
9. RHAMNUS. Perianth double. Cal. urccolate 4-cleft. Pet. 4. Stam. 4, opposite to the petals; filaments inserted upon the throat of the calyx. Germen superior. p. 93.
10. URTICA. Perianth single; of the barren fl. 4-leaved, of the fertile 2-leaved. Stam. 4. Germen superior. Stigma 1, sessile. p. 390.

¹ From *dis*, two, and *oikos*, a house.

11. HUMULUS. Barren fl. solitary. Perianth single, of 5 leaves. Stam. 5. Anthers with 2 pores at the extremity.—Fertile fl. in catkins, with large persistent concave entire scales. Perianth 0. Germen superior, 1-seeded. Styles 2. p. 391.
 12. RIBES. Perianth double. Pet. 5, inserted upon the calyx. Stam. 5. Germen inferior, many-seeded. Style bifid.—Shrubs. p. 158.
 13. BRYONIA. Perianth double. Cor. 5-cleft. Stam. of 3 filaments and 5 anthers. Germen inferior, several-seeded. Style 3-fid.—Herbaceous plants with tendrils. p. 150.
- ** *Barren and fertile flowers in catkins. Perianth 0.*
14. MYRICA. Stam. 4. Styles 2. Scales of the fertile catkin ultimately somewhat fleshy, and adhering to the fruit, which is drupaceous and 1-seeded. p. 395.
 15. SALIX. Stam. 3—5. Styles bifid. Scales of the ovary always dry or herbaceous, and free from the fruit, which contains many comose seeds. p. 397.

Ord. IV. HEXANDRIA. 6 stamens.

16. TAMUS. Perianth single, in 6 deep equal segments. Germen inferior. Stigmas 3. Berry 3-celled. p. 445.
17. RUMEX. Perianth single, the 3 inner ones of the fertile fl. afterwards enlarged, and covering the 1-seeded achene. Germen superior. p. 373.

Ord. V. POLYANDRIA. 8 stamens or more.

* *Flowers in catkins.*

18. POPULUS. Anthers 8—30, arising from a turbinate, oblique, entire, single perianth. Caps. superior, 2-valved, with many comose seeds. p. 414.

** *Flowers scattered.*

19. SEDUM. Cal. 4-partite. Pet. 4. Glands 4, emarginate. Stam. 8. Germens 4. p. 155.
20. MERCURIALIS. Perianth single, 3-partite. Stam. 9—12. Anthers of 2 globose lobes. Germen superior. Styles 2. Caps. 2-celled, 2-seeded. p. 382.
21. CARYOPHYLLACEÆ. Cal. tubular and 5-toothed, or 5-partite. Pet. 5. Stam. 10. Germen superior, several-seeded. Styles 3—5.—Leaves opposite, without stipules. (SILENE, LYCHNIS, HONCKENYA.) p. 54.
22. ROSACEÆ. Cal. 5—10-cleft. Pet. 5. Stam. numerous, inserted on the calyx. Styles numerous. Achenes or drupes many, superior, seated upon an elevated receptacle.—Leaves alternate, with adnate stipules. (FRAGARIA and RUBUS.) p. 117.
23. HYDROCHARIDACEÆ. Flowers spathaceous. Perianth

6-partite, or of 6 pieces : 3 outer herbaceous, 3 inner petaloid.
 Stam. 9—12, or more. Germen inferior. Stigmas 3—6.—
 Floating plants. p. 423.

Ord. VI. MONADELPHIA. *Stamens combined in one set.*

* *Perianth 6-leaved. Flowers not in catkins.*

24. RUSCUS. Flowers on the leaves. Style and stigma 1. Berry
 3-celled. p. 448.

** *Perianth none. Barren flowers in catkins.*

25. SALIX. Fertile fl. in catkins. Style 1. Stigmas 2. Caps 2-
 valved, with many comose seeds. p. 397.
 26. JUNIPERUS. Style and stigma 0. Seeds about 3, inclosed
 within several fleshy and at length united scales. p. 420.
 27. TAXUS. Style and stigma none. Seed solitary, bony, contained
 in a fleshy cup. p. 421.

Ord. VII. POLYADELPHIA. *Stamens combined in three (or more) sets.*

28. BRYONIA. Filaments (or sets of stamens) 3 ; anthers 5. Fruit
 inferior, fleshy. p. 150.

CLASS XXIII. POLYGAMIA.¹ *Stamens and pistils separated or
 united, on the same or on different plants, and having the perianth
 (of some or all) of the pistillate flowers different from that of the
 sterile ones.*

Order I. MONŒCIA. *The two kinds of flowers on the same plant.*

1. ATRIPLEX. Barren and perfect fl.² Perianth single, 5-partite.
 —Pistillate fl. Perianth single, of 2 valves. Fruit superior,
 1-seeded, covered by the enlarged perianth. p. 362.

CLASS XXIV. CRYPTOGRAMIA.³ *Stamens and pistils not evident.*

This class corresponds with the third class of the Natural Arrange-
 ment, ACOTYLEDONES, which see, p. 576.

¹ From πολυς, *many*, and γαμος, *union*; in allusion to the stamens and pistils
 being sometimes separated in the same or in different plants.

² The supposed united fl. are by some considered to be only a second kind of
 pistillate flowers, and to be without fertile stamens, which would remove this
 genus to MONŒCIA.

³ From κρυπτος, *concealed*, and γαμος ; in reference to the obscure mode of fruc-
 tification.

THE BRITISH FLORA

ARRANGEMENT ADOPTED IN THE BRITISH FLORA.

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BRITISH FLORA.

CLASS I.

DICOTYLEDONOUS¹, OR EXOGENOUS, PLANTS.

CELLULAR and vascular. *Stem* formed of two distinct portions, *Wood* and *Bark*; the former containing pith in the centre, from which diverge the *medullary rays*, and increasing by new layers on the outside; the latter by new layers within. *Leaves* with the nerves much branched, and the veinlets reticulated. *Flowers* having the parts usually arranged in a quinary ($\frac{5}{\vee}$ or 5 *n*) or quaternary ($\frac{4}{\vee}$ or 4 *n*) manner. *Embryo* with two opposite *cotyledons*, rarely more and then verticillate.

SUB-CLASS I. THALAMIFLORÆ. (ORD. 1.—XXIII.)

Petals many, distinct, and, as well as the stamens, inserted upon the receptacle (not upon the calyx); hence hypogynous (from ὑπο, beneath, and γυνή, the pistil).

CONSPECTUS OF THE ORDERS.²

A. *Flowers very irregular.*

a. *Leaves with stipules, ovary 1-celled.*

9. VIOLACEÆ. Stamens 5; anthers with a crest, more or less cohering.
Ovary with 3 parietal placentas.
[26. LEGUMINOSÆ. Stamens 10, mono-diadelphous; anthers distinct.
Placenta 1, sutural.]

¹ From δις, twice, or double, and κοτυλῶδων, the cotyledon.

² The orders printed within brackets will be found described at length in some other sub-class, although some genera or species belong in character to the present one. On the other hand, the perigynous and apetalous genera and species will be noticed in the conspectus of some other sub-class. A similar remark applies to all the sub-classes.

b. *Leaves without stipules.*

- 5. FUMARIACEÆ. Stamens 6, diadelphous. Fruit 1-celled.
- 11. POLYGALACEÆ. Stamens 8, diadelphous. Fruit 2-celled.
- 21. BALSAMINACEÆ. Stamens 5; filaments distinct; anthers cohering. Fruit 5-celled.
- 7. RESEDACEÆ. Stamens 10 or more, inserted on a glandular irregular disk. Fruit 1-celled, with three parietal placentas.
- 1. RANUNCULACEÆ. Stamens numerous, without any conspicuous disk. Fruit of 1—5 follicles, each with one sutural placenta.

B. *Flowers regular, or nearly so.*a. *Stamens 20 or more.*

- 1. RANUNCULACEÆ. Stamens distinct. Carpels 1 or more, sometimes cohering below, each with 1 style and 1 placenta. Leaves alternate.
- 4. PAPAVERACEÆ. Sepals 2, caducous. Petals 4. Style 1. Placentas 2 or more. Leaves without stipules.
- 3. NYMPHEACEÆ. Sepals 4—6. Petals numerous. Stamens distinct. Style 1. Stigma rayed. Placentas several.
- 8. CISTACEÆ. Sepals 3, twisted in æstivation, with usually 2 outer ones. Petals 5, fugacious. Style 1. Placentas several.
- 18. HYPERICACEÆ. Sepals 5. Styles several (3—5). Leaves opposite, without stipules.
- 17. TILIACEÆ. Sepals 4—5, all in the same whorl and valvate in æstivation. Petals 4—5. Stamens distinct. Style 1. Placentas several. Leaves with stipules.
- 16. MALVACEÆ. Calyx valvate in æstivation. Petals 5. Stamens united into a column. Leaves with stipules.

b. *Stamens 12 or fewer. Calyx tubular.*

- [67. PLUMBAGINACEÆ. Stamens as few as the petals, opposite to them and attached to their claws. Styles 5. Ovary 1-celled, with 1 ovule.]
- 12. FRANKENIACEÆ. Stamens, if as few as the petals, alternate with and free from them. Style 1, 2—3-cleft. Ovules several, attached to 3 parietal placentas.
- 14. CARYOPHYLLACEÆ, § SILENEÆ. Stamens twice as many as the petals. Styles 2—5. Ovules numerous, attached to a central or axile placenta.

c. *Stamens 12 or fewer. Calyx deeply divided, or sepals distinct.** *Carpels several, distinct.*

- 1. RANUNCULACEÆ. Carpels very numerous, in several rows.
- [35. CRASSULACEÆ. Carpels in a single row.]

** *Carpels in a single row, solitary or 2—5 combined.*

† *Ovary 1-celled, with a free central placenta bearing 3 or more ovules. Anthers not opening by recurved valves.*

- [33. PORTULACACEÆ. Sepals 2. Petals 5.
- 34. PARONYCHIACEÆ. Sepals and petals 4—5. Leaves with stipules.]
- 14. CARYOPHYLLACEÆ, § ALSINEÆ. Sepals and petals 4—5. Leaves without stipules.

†† *Placentas several, parietal, or cells of fruit 1-seeded. Anthers not opening by recurved valves.*

[31. TAMARICACEÆ. Placentas 3. Seeds comose.]

10. DROSERACEÆ. Placentas 3—4. Seeds not comose.

6. CRUCIFERÆ. Placentas 2, or apparently only 1. Style 1. Stamens usually tetradynamous.

††† *Ovary 1-celled, with 1 placenta. Anthers opening by recurved valves.*

2. BERBERIDACEÆ.

†††† *Ovary with 2 or more cells and axile placentas.*

§ *Petals imbricated in æstivation.*

19. ACERACEÆ. Style 1, bifid. Fruit 2-celled, 2—4-seeded, winged. Leaves opposite, exstipulate.

[37. SAXIFRAGACEÆ. Stamens 10. Styles 2. Ovary 2-celled. Fruit many-seeded, wingless. Leaves without stipules.

51. PYROLACEÆ. Stamens 8—10; anthers opening by pores. Style and stigma 1. Ovary 4—5-celled, many-ovuled. Leaves without stipules.

52. MONOTROPACEÆ. Stamens 8—10; anthers opening transversely. Style and stigma 1. Ovary 4—5-celled, many-ovuled. Leaves wanting.]

13. ELATINACEÆ. Styles 3—5. Ovary and fruit 3—5-celled. Seeds numerous, cylindrical, with a striated testa. Leaves entire, opposite, stipuled.

§§ *Petals convolute in æstivation.*

15. LINACEÆ. Stamens 4—5. Stigmas 3—5. Ovary 3—5-celled. Fruit 6—10-celled, 6—10-seeded. Leaves exstipulate, entire.

22. OXALIDACEÆ. Stamens 10. Styles 5. Ovary 5-celled. Seed-coat fleshy, bursting elastically. Leaves alternate, exstipulate.

20. GERANIACEÆ. Stamens 10. Style 1. Stigmas 5. Ovary 5-celled. Fruit 5-celled, 5-seeded, with a long beak. Leaves stipuled.

ORD. I. RANUNCULACEÆ Juss.

Calyx of mostly 5, rarely 3 or 6, pieces or sepals, frequently deformed. *Petals* 5 or more, often deformed, sometimes wanting. *Stamens* usually numerous, rarely as few as the petals, and then alternate with them. *Anthers* adnate, mostly reversed. *Ovaries* 1 or many, distinct or cohering. *Fruit* mostly of several 1-seeded indehiscent *carpels* (*achenes*), or of 1 or more distinct or united *capsules* dehiscing along their inner margin (*follicles*), rarely a *Berry*. *Embryo* straight, in the base of a horny *albumen*.—Herbs or shrubs. Leaves often divided, with more or less dilated stalks. Acrid and poisonous, some of them eminently so, especially *Aconitum*.

* *Ovaries* numerous, short, in several rows, 1-ovuled. *Fruit* of *achenes*.

1. CLEMATIS. *Calyx* valvate or induplicate in æstivation. *Petals* 0.

2. THALICTRUM. *Calyx* imbricated in æstivation. *Petals* 0. *Involucre* 0.

3. ANEMONE. Calyx imbricated in æstivation. Petals 0. Involucre 3-leaved, usually distant from the calyx.
4. ADONIS. Petals 5—10, without a nectariferous pore.
5. MYOSURUS. Sepals prolonged at the base. Petals 5, with a nectariferous pore.
6. RANUNCULUS. Sepals not prolonged at the base. Petals with a nectariferous pore.

*** Ovaries elongated, many-ovuled. Carpels several-seeded. Stamens numerous.*

† Stamens not arising from a glandular disk: anthers reversed (extrorse). Fruit of follicles.

7. CALTHA. Petals 0.
8. TROLLIUS. Petals linear, flat.
- 8^a. ERANTHIS. Petals small, tubular. Follicles stalked.
9. HELLEBORUS. Petals small, tubular. Follicles sessile.
10. AQUILEGIA. Petals 5, funnel-shaped, with a long spur.
11. DELPHINIUM. Upper sepal spurred at the base. Petals 4, irregular.
12. ACONITUM. Upper sepal helmet-shaped. Petals irregular.

†† Stamens arising from a glandular disk: anthers introrse. Carpel solitary, baccate.

13. ACTÆA. Petals 4, irregular.

††† Stamens arising from a glandular disk: anthers introrse. Follicles 2—5.

14. PÆONIA. Petals 5—10, larger than the calyx, regular.

** Ovaries (and fruit) short, 1-seeded. (Gen. 1—6.)*

1. CLEMATIS Linn. Traveller's Joy.

Cal. of 4—6 sepals, with a valvate or induplicate æstivation. *Pet.* 0. *Stamens* and *Styles* numerous. *Achenes* terminated by a long, mostly feathery, awn.—Named from κλημα, the shoot of a vine, which the long branches somewhat resemble.

1. C. *Vitalba* L. (common T.); stem climbing, leaves pinnate, leaflets cordato-ovate inciso-lobate, petioles twining, peduncles rather shorter than the leaves. *E. B. t.* 612.

Hedges; abundant in a calcareous soil, in the middle and south of England. *h.* 6—9.—*Petioles* serve as tendrils. *Flowers* fragrant.

2. THALÍCTRUM Linn. Meadow-Rue.

Cal. of 4—5 sepals, imbricated in æstivation. *Cor.* 0. *Stamens* numerous. *Styles* several. *Achenes* without awns (sessile, or nearly so, ribbed, usually acute at both ends, and *flowers* perfect, in the British species). *Involucre* none.—Named from θαλλω, to be green or flourishing.

1. *T. alpinum* L. (*alpine M.*); stem simple nearly leafless, raceme simple terminal, flowers drooping. *E. B. t.* 262.

Mountains in the north of England, Wales, and Scotland, frequent. *¶. 6, 7.* — *Root-leaves* upon long stalks, biternate; *leaflets* roundish, crenate or lobed, dark-green. *Stam.* 10—12. *Ovaries* 2—4. *Flowers* few. *Pedicels* in fruit recurved: they are straight in the two following.

2. *T. minus* L. (*lesser M.*); glabrous or slightly pubescent, leaves 3—4-pinnate, leaflets roundish or wedge-shaped trifid and toothed glaucous beneath, panicle diffuse, its branches alternate or whorled, flowers mostly drooping.—*α.* stem leafless at the base, petioles with inflexed auricles at the base, panicle leafless, achenes fusiform. *E. B. t.* 11.—*β.* stem leafy to the base, petioles with reflexed auricles, panicle leafy, achenes narrow oblong. *T. majus* Sm.; *E. B. t.* 611. *T. flexuosum* Bernh.—*γ.* stem leafy to the base, petioles with horizontal auricles, panicle leafless, achenes oval. *T. saxatile* D. C. *T. Kochii* Fries.

Stony pastures, especially in limestone or chalky countries. Sand-hills on the coast, near S. Shields and Yarmouth; Scotland.—*β.* Principally in the north of England and in Scotland.—*γ.* Cheddar, Somersetshire. *¶. 6, 7.* — *Stem* usually zigzag, from one to two feet high, mostly glaucous, solid, or hollow particularly when luxuriant. Although we do not recognise the above as distinct species, we avail ourselves of the characters proposed by Mr. Babington to mark our varieties. *T. pubescens*, *fatidum*, *calcareum*, &c., appear to be the pubescent or glandular states of it, and *T. nutans* Desf. a form with much-acuminate leaflets.

3. *T. flavum* L. (*common M.*); stem erect branched furrowed, leaves bipinnate, leaflets roundish or broadly obovate or wedge-shaped trifid, or panicle compact subcorymbose, flowers erect. *E. B. t.* 367.

Banks of rivers and ditches and in moist meadows. Less frequent in Scotland, and principally found along the shores of the Clyde.—*¶. 6, 7.* — *Stem* 2—3 ft. high. *Flowers* very numerous, yellow. Lobes of the leaves varying in breadth.

3. ANEMONE Linn. Anemone.

Involucre of 3 divided leaves, more or less remote from the flower. *Cal.* petaloid, of 5—9 sepals, imbricated in æstivation. *Cor.* 0. *Stamens* and *Styles* numerous. *Achenes* pointed or awned.—Named from *ανεμωνη*, and that from *ανεμος*, the wind; because the flowers are easily moved by the wind.

1. *A. Pulsatilla* L. (*Pasque-flower A.*); leaves as well as the involucre with doubly pinnatifid linear segments, flower inclined, sepals 6, achenes with long feathery awns. *E. B. t.* 51.

Dry chalky pastures, in several parts of England. γ . 4, 5.—*Flowers* purple, externally silky, very handsome.

2. *A. nemorósa* L. (*Wood A.*); leaves ternate, leaflets lanceolate lobed and cut, involucre similar to them petiolate, stem single-flowered, sepals 6 elliptical, point of achenes not feathery. *E. B.* t. 355.

Moist woods and pastures, and on high mountains. γ . 3—6.—*Flowers* white, tinged with purple outside.

3. *A.* Apennína* L. (*Blue Mountain A.*); leaves triternate segments lanceolate cut and toothed, involucre petiolate ternate and cut, sepals 12—14, point of achenes not feathery. *E. B.* t. 1062.

Wimbledon woods, Surrey; near Harrow; Luton Hoe, Bedfordshire; near Berkhamstead, Hertfordshire; and Cullen, Banff. γ . 4. — *Flowers* light and bright blue.

4. *A.* ranunculoídes* L. (*yellow Wood A.*); leaves ternate or quinate, leaflets subtrifid cut and toothed, involucre shortly stalked ternate cut and toothed, sepals 5—6 elliptical, point of achenes not feathery. *E. B.* t. 1484.

Woods, rare; King's Langley, Herts; and Wrotham, Kent. γ . 4.—*Flowers* bright yellow.

4. *ADÓNIS* Linn. Pheasant's Eye.

Cal. of 5 sepals. *Pet.* 5—10, without a nectary. *Stamens* and *Styles* numerous. *Achenes* without awns.—Name: its deep red colour suggested the idea of its being stained by the blood of *Adónis*.

1. *A.* autumnális* L. (*Corn P.*); petals concave connivent scarcely longer than the glabrous calyx, achenes reticulated collected into an ovate head, stem branched. *E. B.* t. 308.

Amongst corn, about London, Isle of Wight, Norfolk, Gloucestershire, Glasgow, and Dublin. ☉. 5—7, and partially till autumn. — *Leaves* thrice compound, with linear segments. *Petals* bright scarlet. Cultivated under the name of *Flos-Adonis*.

5. *MYOSÚRUS* Linn. Mouse-tail.

Cal. of 5 sepals, prolonged at the base, imbricated in æstivation. *Pet.* 5, their *claws* tubular (nectariferous). *Stamens* 5. *Achenes* numerous, collected upon a very long columnar receptacle.—Name, $\mu\upsilon\varsigma$, $\mu\upsilon\omicron\varsigma$, a mouse, and *ovpa*, a tail, from the elongated receptacle or the germens of seed-vessels.

1. *M. mínimus* L. (*common M.*) *E. B.* t. 435.

Corn-fields and waste places in England, in a gravelly or chalky soil. North of Ireland. ☉. 4—6. — A small plant, from 2—6

inches in height. *Leaves* erect narrow, linear-spathulate, fleshy. *Scapes* slender bearing a single, small, greenish flower, *Receptacle* of *achenes* at first short, then lengthening to from 1—3 inches.

6. RANÚNCULUS Linn. Crowfoot. Spearwort.

Cal. of 5 (rarely 3) sepals, not prolonged at the base. *Pet.* 5 (rarely many), with a nectary at the base. *Achenes* without awns. [In the pore or nectary of the petals of this, and of *Myosurus*, we observe an affinity with the tubular petals of *Helleborus*, and even of *Trollius*; only, in the two latter, the petals are more altered in shape.]—Named from *rana*, a *frog*; these plants delighting to grow where frogs abound.

* *Achenes* conspicuously transversely wrinkled. *Petals* white, with the claw yellow, nectary without a scale.

1. *R. fluitans* Lam. (*River C.*); stem floating, leaves all submersed capillaceo-multifid, their segments very long and parallel, petals obovate much larger than the calyx, receptacle of fruit conical hispid, style cylindrical. *E. B. S. t.* 2870.

Lakes, rivers, and canals, in deep water. 4. 6, 7.

2. *R. circinatus* Sibth. (*rigid-leaved Water C.*); stem floating, leaves all submersed flat roundish capillaceo-multifid, their segments spreading all in the same plane, petals obovate much larger than the calyx, receptacle of fruit oblong hispid, style cylindrical. *E. B. S. t.* 2869.

Lakes, ponds, and ditches. 4. 6—8. — Whatever be thought of the last species, we cannot believe this to be distinct from the following.

3. *R. aquatilis* L. (*common Water C.*); stem floating submersed, leaves capillaceo-multifid, their segments spreading in all directions and forming a globular mass, floating leaves trifid or tripartite (occasionally wanting) their lobes cut or crenate, stipule-like appendages of upper leaves adhering to the petiole, petals obovate (usually much) larger than the calyx, receptacle of fruit hispid, carpels half-obovate.—a. Flowers rather large, petals persistent, floating leaves usually present.—a. *heterophyllus*, receptacle conical, stigma oblong, carpels laterally pointed. *E. B. t.* 101. *R. heterophyllus* Fries.—b. receptacle conical, stigma lingulate (1. *confusus*, receptacle ovate-conical, carpels compressed narrowed upwards, stamens longer than the head of achenes. *R. confusus* Godr.—2. *Symeii*, receptacle long-conical, carpels inflated at the end, stamens short. *R. Baudotii* Syme.)—c. *subpellatus*, receptacle ovate, stigma clavate, carpels very obtuse. *R. peltatus* Fries.—d. *floribundus*, receptacle globose, stigma lingulate, carpels very obtuse. *R. floribundus*

Bab.— β . Flowers small, petals caducous, carpels somewhat laterally apiculate, stigma oblong, floating leaves usually absent. a. *trichophyllus*, carpels compressed. *R. trichophyllus* Chaix.— b. *Drouetii*, carpels inflated at the end. *R. Drouetii* Bab.

Lakes, ponds, and ditches. γ . *Fl.* Spring and Summer.—This chiefly differs from the next by the shorter style and larger stigma. We have arranged the above varieties so as to exhibit what Mr. Babington describes as seven distinct species: in doing so, we have taken the characters almost solely from the flowers; these, when a species is distinct, or a variety permanent, being more to be relied on than those from the foliage.

4. *R. tripartitus* DC. (*three-lobed Water C.*); stem floating, submersed leaves wanting or divided into capillary segments spreading in all directions, floating ones tripartite, their lobes triangular-obovate 2—4-cleft, stipule-like appendages of upper leaves almost free from the petiole, petals oblong (small) as short as or twice as long as the calyx, receptacle of fruit hispid, style elongated subulate, stigma small, carpels irregularly obovate much inflated. *E. B. S. t.* 2946.

Shallow ditches near Claremont House, Surrey; *H. Watson*, Haverfordwest, Pembrokeshire; *C. C. Babington*. γ , or \odot ? (*Borrer.*) 6, 7.—*Stamens* few, 5—10. Submersed leaves always absent in English specimens. In deference to Mr. Borrer's opinion we have kept this and the last two species distinct: the present one has small flowers, and forms the transition to the two next, from which, along with all the preceding, it differs by the hispid receptacle: De Candolle himself was very doubtful as to its claims to rank as a species.

5. *R. cœnósus* Guss. (*Mud C.*); stem creeping or floating, leaves roundish kidney-shaped with 3—5 notched lobes, petals oblong about twice longer than the calyx, receptacle of fruit glabrous. *R. Lenormandi* *F. W. Schultz*; *E. B. S. t.* 2930.

Shallow water in various places in England; Sussex, Plymouth, Surrey, Needham Forest in Staffordshire, Charnwood Forest in Leicestershire, and head of Coniston Water in Lancashire. Dumfriesshire and about Glasgow in Scotland. γ . 6—8.—The style is said to be terminal in this species, lateral in the next: this is sometimes true, but is certainly not constant; and we cannot discover any other good grounds for keeping it distinct.

6. *R. hederáceus* L. (*Ivy C.*); stem submersed and throwing out roots or creeping, leaves roundish kidney-shaped with 3—5 rounded entire lobes, petals (small) narrow scarcely longer than the calyx or sometimes twice as long, stamens 5—12, receptacle of fruit glabrous. *E. B. t.* 2003.

Wet places, shallow pools of water, and where water has stood. γ . *Fl.* throughout the summer.—With regard to this and the five preceding species, M. Seringe, to whom most of them were well known,

and who had studied them closely, long ago recorded his decided opinion, that all were mere varieties. Mr. Bentham also, in his Handbook of the British Flora, unites all the species of this section into one, under the name of *R. aquaticus*, and enumerates only four varieties. Numerous intermediate forms are discovered every year: these, according to some, unite the already known species, according to others, are so many new ones: in the above we have endeavoured to pursue a middle path. We have not found the characters taken from the receptacle to vary, but we dare not assert that it does not, since we know that the hairiness of the achenes of *R. aquatilis* certainly does, and the hairiness is merely a continuation of that of the receptacle.

** *Achenes not transversely wrinkled. Petals white; nectary without a scale.*

7. *R. *alpéstris* L. (*alpine white C.*); leaves glabrous, radical ones petiolate orbicular more or less 3—5-lobed, lobes at the extremity crenate, stem-leaves 1—2 sessile simple linear or deeply divided into 3—5 simple linear segments, stem mostly 1-flowered, petals obcordate. *E. B. t.* 2390.

“By little rills and among rocks on the mountains of Clova, Angusshire, seldom flowering.” *G. Don.* 1809. *¶.* 5. — *Stem* 3—6 inches high. A specimen from Don in Herb. Brodie, which is marked “on rocks near the Head of Clova,” has the aspect of a wild one, but we still consider it a very doubtful native.

*** *Achenes not transversely wrinkled or obscurely so. Flowers yellow; nectary with a small scale.*

† *Leaves undivided.*

8. *R. Língua* L. (*great S.*); leaves lanceolate subserrate sessile semiamplexicaul, stem erect glabrous, achenes minutely pitted with a broad ensiform beak. *E. B. t.* 100.

Marshes, sides of lakes, and ditches; not very general. *¶.* 7—9. — *Stem* 2—3 feet high. *Flowers* large, handsome.

9. *R. ophioglossifólius* Vill. (*Serpent's Tongue S.*); leaves oblong sessile, lower ones cordato-ovate petiolate, stem erect many-flowered, achenes obliquely ovate with a short point margined, the sides tubercled. *E. B. S. t.* 2833.

St. Peter's Marsh, Jersey; *Mr. C. C. Babington.* *¶.* 6. — A very distinct species, allied in the foliage to the following, but in its annual duration and the achenes to *R. hirsutus*. *Flowers* small; heads of fruit large in comparison.

10. *R. Flámmula* L. (*lesser S.*); leaves linear-lanceolate nearly entire petiolate, the lower ones ovato-lanceolate, stem decumbent at the base and rooting, achenes minutely pitted or smooth with a short or sometimes subulate point. — *a.* stem

ascending. *E. B.* t. 387.— β . much smaller, stem creeping filiform. *R. reptans* *Lightf. Scot.* p. 289. v. 1. *title-p.*

Sides of lakes and ditches, abundant.— β . Margins of the Highland lakes, in barren stony places. \mathcal{U} . 6—8.

11. *R. *gramineus* L. (*grassy C.*); leaves linear-lanceolate striated entire, stem erect glabrous, scale of the nectary tubular, achenes irregularly wrinkled with a short recurved point, root fascicled. *E. B.* t. 2306.

“Brought from North Wales by Mr. Pritchard.” *With.* \mathcal{U} . 5, 6.

12. *R. Ficaria* L. (*Pilewort C., lesser Celandine*); leaves cordate petiolate angular or crenate, sepals 3, petals 9, achenes smooth blunt. *E. B.* t. 584. *Ficaria ranunculoides* DC.

Pastures, woods, bushy places, &c. \mathcal{U} . 3—5.—*Root* consisting of many long fasciculated knobs. *Leaves* petiolate, 2—3 on the 1-flowered stem. *Flowers* glossy, yellow.

†† *Leaves* divided. *Achenes* smooth or wrinkled. *Perennial*.

13. *R. auricomus* L. (*Wood C.*); leaves glabrous, radical ones reniform 3-partite and cut, stem-leaves divided to the base into linear subdentate segments, calyx pubescent shorter than the petals, head of fruit globose, achenes downy. *E. B.* t. 624.

Woods and coppices, not unfrequent. \mathcal{U} . 4, 5.—Not acrid, as most of the other *Crowfoots*.

14. *R. scelerátus* L. (*Celery-leaved C.*); leaves glabrous, radical ones petiolate tripartite, lobes cut very obtuse, upper ones in 3 linear cut segments and reflexed calyx hairy, achenes slightly wrinkled collected into an oblong head, receptacle hairy. *E. B.* t. 681.

Sides of pools and ditches. \mathcal{U} . 5—9.—*Stem* short, succulent, 1—2 feet high. *Lower leaves* very broad and glossy. *Flowers* extremely small, pale yellow.

15. *R. ácris* L. (*upright Meadow C.*); calyx spreading, peduncles rounded (not furrowed), leaves tripartite their segments acute trifid and cut, upper ones linear, achenes and receptacle glabrous. *E. B.* t. 652.

Meadows, pastures, and mountainous situations. \mathcal{U} . 6, 7.

16. *R. répens* L. (*creeping C.*); stem with runners, calyx spreading, flower-stalks furrowed, leaves with 3 petiolate leaflets which are 3-lobed or 3-partite and cut, achenes collected into a globose head glabrous, receptacle hairy. *E. B.* t. 516.

Pastures, too frequent. \mathcal{U} . 5—8.—Well distinguished by its runners or creeping scions, and furrowed peduncles.

17. *R. bulbósus* L. (*bulbous C.*); calyx hairy reflexed, peduncles furrowed, stem upright many-flowered, leaves cut into 3

petiolate leaflets which are 3-lobed or 3-partite and cut, root bulbous, achenes smooth, receptacle hairy. *E. B. t. 515.*

Meadows and pastures, frequent. *¶. 5, 6.*—*Stem* 1 ft. high, hairy. Lobes of the lower leaves subovate; upper leaves with linear segments.

††† *Leaves divided. Achenes tuberculated or muricated. Annual.*

18. *R. hirsútus* Curt. (*pale hairy C.*); calyx reflexed, stem erect many-flowered hairy, leaves 3-lobed or 3-partite, lobes obtuse cut, root fibrous, achenes margined and tuberculated near the margin. *E. B. t. 1504. R. Philonotis Ehrh.*

Meadows and waste ground. ☉. 6—10.—Varying extremely in size. When very small it is *R. parvulus* L.

19. *R. arvénis* L. (*Corn C.*); calyx spreading, stem erect many-flowered, leaves 3-cleft their lobes usually again 3-cleft into linear entire or bi-tridentate segments, achenes margined muricated. *E. B. t. 135.*

Corn-fields. ☉. 5—7.—*Achenes* very large and prickly. *Flowers* small, pale yellow. Said to be extremely injurious to cattle.

20. *R. parviflorus* L. (*small-flowered C.*); stem spreading, leaves hairy 3-lobed and cut, penduncles opposite the leaves, calyx as long as the petals, achenes muricated. *E. B. t. 120.*

Corn-fields about London, Norwich, and in the S. and S. W. of England. Chelmsford. Hackfall. Ormshead. Cork. Sand-hills between Baldoyle and Howth, Dublin. ☉. 5—8.—Well distinguished by its spreading stems, lateral flower-stalks, and small narrow petals, one or two of which are often wanting.

** *Ovaries (and fruit) elongated, many-seeded. Stamens numerous. (Gen. 7—14.)*

7. CÁLTHA Linn. Marsh Marygold.

Sepals 5, petaloid. *Pet.* none. *Follicles* 5—10, compressed, spreading, with many seeds.—Named from *καλαθος*, a cup, which its flowers resemble.

1. *C. palústris* L. (*common M.*); stem ascending rooting or creeping, calyx-leaves 5—6 oval deciduous.—*α.* leaves orbiculari-cordate or reniform crenate. *E. B. t. 506.*—*β.* leaves cordato-triangular toothed. *C. radicans Forst. : E. B. t. 2175.*

Marshy places, common.—*β* Scotland? *¶. 3—6.*—Petioles with large stipule-like auricles at the base. *β.* is only known, and in our opinion has never been known, except as a garden variety; what is usually taken for it is a small state of *α.* common in mountainous situations, and which is the *C. minor* of Miller's Dict.

8. *TRÓLLIUS* Linn. Globe flower.

Sepals 5 or many, coloured. *Pet.* 5 or many, small, linear, flat, with an obscure depression above the contracted base. *Stamens* numerous. *Follicles* many.—Name said to be derived from “*trol* or *trolen*,” a *ball* or *globe* in old German, and bearing the same meaning as our English word *globe-flower*.

1. *T. Europæus* L. (*Mountain G.*); calyx of about 15 concave erect sepals, petals nearly as long as the stamens. *E. B.* t. 28.

Moist mountain-pastures in the north of England and Ireland, Wales and Scotland. *Fl.* 6—8.—*Leaves* in 5 deep segments, which are again cut and serrate. *Flowers* large, handsome.

(*Eránthis hyemális* Salisb., the well-known *Winter-aconite* of our gardens and shrubberies, although naturalized in several localities, has no claim to a place in the *British Flora*.)

9. *HELLÉBORUS* Linn. Hellebore.

Cal. of 5 persistent sepals. *Pet.* 8—10, small, tubular, and nectariferous. *Stamens* numerous. *Follicles* 3—10, sessile.—Name: ἑλεῖν, to *injure*, and βόφα, *food*, from its poisonous nature.

1. *H. víridis* L. (*green H.*); stem few-flowered leafy, leaves digitate, calyx spreading. *E. B.* t. 200.

Woods, thickets, and hedges; and about walls and old houses especially in a chalky soil: perhaps wild in Birkdale near Helmsley, Yorkshire, and in the south of England. *Fl.* 3, 4.—About 1 ft. high. *Leaves* annual, large, on a broad stalk; upper ones sessile; segments linear-lanceolate, serrate at the extremity. *Cal.* large, greenish-yellow. This and the following have been often employed medicinally, instead of the true *ancient* or *Greek H.* (*H. officinalis* Sibth. and Smith).

2. *H. fœtidus* L. (*stinking H.*); stem many-flowered leafy, leaves pedate, calyx converging. *E. B.* t. 613.

Pastures and thickets, especially in chalky counties, in England; wild in Hants; *Dr. Bromfield*. Blantyre, Barncluith, and by the Doune (Ayr) on the west; and near Anstruther, on the east of Scotland, but certainly introduced. *Fl.* 2—4.—A bushy plant, 2 feet high. *Leaves* evergreen, uppermost ones gradually becoming *bracteas*. *Flowers* globose; *calyx* often tipped with a purple tinge. Fetid and powerfully cathartic.

10. *AQUILÉGIA* Linn. Columbine.

Cal. of 5 sepals, deciduous, coloured. *Pet.* 5, regular, terminating below in a horn-shaped spur or nectary. *Stamens* numerous. *Follicles* 5.—Named from *aquila*, an *eagle*, whose claws the nectaries resemble.

1. A. **vulgaris* L. (common C.); spur of the petals incurved, follicles hairy, stem leafy many-flowered, leaves nearly glabrous, styles as long as the stamens. *E. B. t.* 297.

Woods and coppices, in several places, perhaps wild in Hants.
 4. 5—7. — Inner *stamens* frequently imperfect.

11. DELPHINIUM Linn. Larkspur.

Cal. coloured, deciduous, irregular, upper sepal produced at the base into a *spur*. *Pet.* 4.; 2 upper ones with appendages included within the spur. *Stamens* numerous. *Follicles* 1—5. — Named from *delphinus*, or δελφιν, a *dolphin*; on account of the shape of the upper sepal.

1. D. **Consólida* L. (*Field L.*); stem erect branched, flowers in lax racemes, petals combined, inner spur of one piece, pedicels shorter than the bracteas, follicle one glabrous. *E. B. t.* 1839.

Sandy or chalky fields; Suffolk, Kent. "About Cambridge, at Quay, the hills are quite blue with it; it also occurs red, pink, and white, and yet *Ray* does not mention it;" *Henslow*. Near St. Helier's Jersey: *Mr. Babington*. 4. 6, 7.

12. ACONITUM Linn. Wolf's-Bane.

Cal. petaloid, irregular, upper sepal helmet-shaped; 2 upper petals or nectaries on long stalks, and concealed within the helmet-shaped leaflet. *Stamens* numerous. *Follicles* 3—5. — Name derived from *Acone* in Bithynia; or rather from ακων, a *dart*, from its having been long ago used to poison such weapons with.

1. A. **Napéllus* L. (common W., or *Monk's-hood*); upper sepal arched at the back, spur of the nectary nearly conical bent down, wings of the stamen cuspidate or none, lobes of the leaves cuneate pinnatifid. *E. B. S. t.* 2730.

Teme, Herefordshire. Denbighshire and Monmouthshire. Below Staverton Bridge, Devon. 4. 5—7.

13. ACTÆ'A Linn. Banc-berry.

Cal. of 4 sepals caducous. *Pet.* 4. *Stamens* numerous. *Ovary* 1. *Berry* 1-celled, indehiscent. *Seeds* numerous. — Named from ακτη, the *elder*; the leaves somewhat resembling those of the *elder*.

1. A. *spicáta* L. (*B.*, or *Herb Christopher*); raceme simple elongated, petals as long as the stamens, pedicels of the fruit slender. *E. B. t.* 918.

Bushy places, especially in limestone tracts in Yorkshire; near Halifax: said to be found near Ambleside and Sandwick, Ulleswater,

in Westmoreland. γ . 5.—*Stem* 1—2 ft. high. *Leaves* petiolate, 3-ternate; *leaflets* ovate, deeply cut and serrate.

14. *PÆÓNIA* Linn. *Pæony*.

Cal. of 5 sepals. *Pet.* 5—10, concave. *Stamens* numerous, arising from a thick disk. *Follicles* 2—5, with many seeds, and crowned with the bi-lamellate *stigmas*.—Said to be named in honour of the physician *Pæon*, or *Παιων*; but this was one of the names of Apollo, and the title of all physicians.

1. *P.* corállina* Retz (*entire-leaved P.*); herbaceous, follicles downy recurved, leaves biternate glabrous, their segments ovate entire. *E. B.* t. 1513.

On the island called Steep Holmes, in the Severn. Blaize Castle, near Bristol. *Mr. Hancock.* γ . 5, 6.

ORD. II. BERBERIDACEÆ Vent.

Sepals 3—6, often coloured, in a double row and bracteated. *Petals* of the same or double that number, glandular at the base. *Stamens* opposite to the petals. *Anthers* 2-celled, opening by recurved valves. *Ovary* 1-celled. *Style* usually short. *Fruit* mostly a *Berry*. *Seeds* inserted at the base of or upon a lateral *placentu*. *Albumen* fleshy.—Shrubs often spiny, or herbs, of temperate climates. *Leaves ciliated on the serratures*.

1. BERBERIS. *Stamens* 6. *Fruit* a 2—3-seeded berry.
2. EPIMEDIUM. *Stamens* 4. *Fruit* a many-seeded pod.

1. *BÉRBERIS* Linn. *Barberry*.

Cal. of six concave, coloured, inferior, deciduous sepals. *Pet.* 6, each with two glands at the base. *Stamens* 6. *Stigma* peltate nearly sessile. *Berry* 2—3-seeded.—Name: *Berberys* is the Arabic name of the fruit.

1. *B. vulgáris* L. (*common B.*); racemes pendulous, spines 3-forked, leaves obovate ciliato-serrate. *E. B.* t. 49.

Copses, woods, and hedges, in England and Scotland. Near Fermoy, Ireland. h . 5, 6.—*Shrub* with upright twiggy stems. Flowers yellow, smelling disagreeably. *Stamens* highly curious in their formation and in their elastic property when touched. *Berries* oblong, a little curved, red, tipped with the black *stigma*: they are acid and much used for preserves.

2. *EPIMÉDIUM* Linn. *Barrenwort*.

Cal. of 4 sepals, caducous. *Pet.* inferior, with an inflated nectary on the upper side. *Stamens* 4. *Capsule* pod-shaped, 2-valved, inner valve bearing several seeds along its middle.—Name of doubtful origin.

1. *E. alpinum* L. (*alpine B.*); root-leaves none, stem-leaf twice ternate. *E. B. t.* 438.

Subalpine woods, but only where planted. Bingley woods, Yorkshire. On Carrock Fell and Skiddaw, Cumberland. Near Glasgow and Edinburgh. 4. 5.—*Stems* several from the same root, erect, simple, bearing each a leaf; *leaflets* heart-shaped, extremely delicate, ciliated at the margin, hairy beneath, serrate; *lateral* ones inequilateral. *Panicle* shorter than the leaf, springing from the swollen base of the petiole. *Flowers* reddish; *nectary* yellowish, resembling an inflated membrane. *Anthers* very curious, of 2 cells, opening by two *valves* which spring back upwards, and suffer the *pollen* to escape.

ORD. III. NYMPHÆACEÆ De Cand.

Sepals about five, often gradually passing into the numerous *petals*, and these again into *stamens*, which arise from a fleshy disk surrounding more or less entirely the many-celled and many-seeded *ovary*. *Stigma* peltate, rayed. *Seeds* in a gelatinous aril. *Albumen* farinaceous. *Embryo* enclosed in a membranous bag. *Cotyledons* foliaceous:—*Aquatic* herbs, with *peltate* or *cordate* leaves and *magnificent* flowers.—The roots of *Nymphaea Lotus* are used as food. One plant of this family, found by Sir R. Schomburgk in the Berbice (*Victoria regia*), has the blossoms 15 inches and the leaves 6 feet in diameter!

1. NYMPHÆA. Petals and stamens inserted upon the base of the ovary.
2. NUPHAR. Petals and stamens inserted upon the receptacle.

1. NYMPHÆA Linn. White Water-Lily.

Cal. of 4—5 sepals. *Pet.* inserted, as well as the *stamens*, upon a fleshy disk or covering to the ovary (so as apparently to arise from it). *Berry* many-celled, many-seeded.—Name: the *Νυμφαία* of the Greeks, so called from its inhabiting the waters, as the *Nymphs* or *Naiads* were supposed to do.

1. *N. alba* L. (*great W.*); leaves cordate entire, stigma of 16 ascending rays. *E. B. t.* 160.

Lakes and still waters frequent. 4. 7.—Of this there is occasionally a variety with small flowers.

2. NÚPHAR Sm. Yellow Water-Lily.

Cal. of 5—6 sepals. *Pet.* inserted, as well as the *stamens*, upon the *receptacle*. *Berry* superior, many-celled, many-seeded.—Name, the *νύμφα* of Dioscorides, applied to this plant. The *Arabic* name is *naúfar*, according to Forskaol.

1. *N. lutea* Sm. (*common Y.*); leaves cordate their lobes approximate, *cal.* of 5 sepals, anthers linear, stigma expanded entire with from 10—20 rays. *Nymphaea L.: F. B. t.* 159.

Lakes and ditches, frequent. 2. 7. — *Flowers* large, smelling somewhat like brandy; which circumstance, in conjunction with its flagon-shaped seed-vessels, has led to the name *Brandy-bottle*.

2. *N. púmila* DC. (*least* Y.); leaves cordate the lobes approximate, anthers oblong, stigma (green) with 8 or 10 teeth and as many (yellow) rays, fruit furrowed upwards. *N. minima*. *E. B. t.* 2292.

In several of the small Highland lakes, Mugdock, near Glasgow, Chartners Lough, Northumberland? 2. 7, 8. — From the observations made by Dr. Torrey and Gray, it would seem doubtful if this were essentially distinct, not merely from *N. Kalmiana*, but even from *N. lutea*, and some others. The English plant we have not seen: it is said to have the stigma of *N. lutea*, of which it may be only a small-flowered form.

ORD. IV. PAPAVERACEÆ *Juss.*

Calyx of 2 rarely 3 deciduous sepals. *Corolla* of 4 rarely 5 or 6 petals. *Stamens* indefinite. *Ovary* 1-celled. *Stigma* lobed or rayed. *Fruit* dry, with 2 or more parietal usually projecting placentas, forming complete or incomplete dissepiments, hence 1- or several-celled, many-seeded. *Embryo* in the base of a fleshy *albumen*. — *Herbaceous* plants. Leaves *alternate*. — *Opium* is the product of this tribe, which largely afford a milky, acrid, and narcotic juice; while the seeds of all, except *Argemone Mexicana*, are mild and oleaginous. In all the species the *petals* are crumpled in æstivation except in *Sanguinaria*, where they are 8—10 in number.

* *Fruit globose, oblong, or clavate. Stigma rayed.*

1. PAPAVER. Placentas lamelliform, projecting to near the axis. Stigma sessile.
2. MECONOPSIS. Placentas filiform. Style short but evident.

** *Fruit linear, elongated. Stigma 2—4-lobed.*

3. GLAUCIUM. Placentas 2, spongy, meeting in the axis. Pod 2-valved, opening from the apex. Seeds not crested.
4. RÖMERIA. Placentas 3—4 (*in Brit. sp.*), scarcely projecting. Pod 3—4-valved, opening from the apex. Seeds not crested.
5. CHELIDONIUM. Placentas 2, filiform. Pod 2-valved, opening from the base. Seeds crested.

* *Fruit globose, oblong, or clavate. Stigma rayed.*

1. PAPÁVER *Linn.* Poppy.

Sepals 2 rarely 3. *Pet.* 4 rarely 6. *Stigma* sessile, radiated. *Caps.* with the seeds on parietal *placentas* projecting towards the centre of the single cell, and escaping by pores beneath the permanent rayed sessile *stigma*. — Named because it is administered with *pap* (*papa*, in Celtic) to induce sleep.

1. *P. Argemón* L. (*long-prickly-headed P.*); capsule clavate hispid with erect bristles, filaments dilated upwards, stem leafy, leaves bipinnatifid. *E. B.* t. 643.

Corn-fields, not unfrequent. ☉. 5—7.—*Flowers* small. *Petals* narrow, scarlet.

2. *P. híbridum* L. (*round-rough-headed P.*); capsule subglobose hispid with spreading bristles, filaments dilated upwards, stem leafy, leaves bipinnatifid. *E. B.* t. 43.

Sandy and chalky fields in England, rather rare. Norfolk, Durham, Cornwall, Kent, Essex. Ormeshead. Ireland. ☉. 5—7.

3. *P. dúbium* L. (*long-smooth-headed P.*); capsule glabrous oblong, crenatures of stigma distinct, filaments subulate, stem hairy, bristles of the flower-stalks adpressed, leaves once or twice pinnatifid sessile. *E. B.* t. 644.

Corn-fields, not unfrequent. ☉. 5—7.—*Stems* 1—2 ft. high. *Flowers* large. *Petals* broad, light scarlet.

4. *P. Rhœas* L. (*common red P.*); capsule glabrous nearly globose, crenatures of the stigmas overlapping each other at the margin, filaments subulate, stem bristly, leaves once or twice pinnatifid sessile.—*α.* bristles of the peduncles spreading. *E. B.* t. 645.—*β.* bristles of the peduncles adpressed.

Corn-fields: rare in the west of Scotland. *β.* Channel Islands and Isle of Wight. ☉. *Fl.* all summer.—The common form is readily distinguished from *P. dubium* by its short capsule and the spreading hairs of the peduncles: var. *β.* is conjectured by Dr. Bromfield to be a hybrid.

5. *P.* somníferum* L. (*white P.*); glaucous, capsule globose glabrous, filaments dilated upwards, stem and amplexicaul leaves usually glabrous. *E. B.* t. 2145.

In Norfolk, Cambridgeshire, Isle of Wight, and other places where the plant has been cultivated. ☉. 7.—*Flowers* generally white, with a purple eye, but varying much as to colour. From the unripe capsules *opium* is prepared.

2. ΜΕCΟΝÓPSIS *Viguier.* Welsh-Poppy.

Sep. 2. *Pet.* 4. *Style* evident. *Stigma* of few rays. *Capsule* opening below the style by 4—6 valves. *Placentas* filiform.—Named from *μῆκων*, a poppy, and *οψις*, resemblance.

1. *M. Cámbrica* Vig. (*common W.*); capsule glabrous, leaves mostly petiolate. *DC.* *Papaver* L.: *E. B.* t. 66.

Rare: rocky and shady places. Foot of Lidford cascade, Devon. Cheddar rocks, Somerset. N. Wales and Westmoreland. Rosstrevor hill, Ireland. Scotland, but naturalized. 2. 6.—*Leaves* on long stalks, pinnate, the pinnae pinnatifid. *Flowers* large, yellow.

** *Fruit linear, elongated. Stigma 2—4-lobed.*

3. GLAUCIUM Tourn. Horned-Poppy.

Sep. 2. *Pet.* 4. *Stigma* 2-lobed, sessile. *Pod.* linear, the two *placentas* at length connected by a spongy dissepiment, hence 2-celled, 2-valved. *Seeds* dotted without a crest.—Named from the *glaucous* or sea-green hue of the stems and leaves.

1. *G. luteum* Scop. (*yellow II.*); *pod* minutely tuberculated, cauline leaves amplexicaul sinuate, stem glabrous. *E. B. t.* 8. *Chelidonium Glaucium L.*

Sandy sea-shores, frequent. ☉. 6—10. — *Stem* 1—2 ft. high, very glaucous, much branched. *Leaves* scabrous. *Flowers* very large, handsome, succeeded by *pods* 6—10 inches long.

2. *G.* phæniceum* Crantz (*scarlet II.*); *pod* hispid, cauline leaves deeply pinnatifid and cut, stem hairy. *E. B. t.* 1433. *Chelidonium corniculatum L.*

Said to have been found on Portland island, and in Norfolk ☉. 6, 7.—*Petals* scarlet, with a black spot at their base.

4. RÆMÉRIA De Cand. Rœmeria.

Sep. 2. *Pet.* 4. *Stigma* 2—4-lobed, sessile. *Pod* linear with 2—4 *placentas* not connected by a perfect dissepiment, 1-celled, 2—4-valved, *valves* separating from the apex downwards. *Seeds* dotted, without a crest.—Named after J. J. Rœmer, Professor of Botany at Landshut.

1. *R.* hybrida* DC. (*erect-podded R.*); *pod* 3-valved erect hispid near the summit, leaves tripinnatifid the segments linear scabrous. *Chelidonium L.*: *E. B. t.* 201. *Glaucium violaceum Juss.*

Corn-fields, rare. Norfolk and Cambridgeshire. ☉. 5, 6.—*Sepals* hairy. *Petals* violet-blue.

5. CHELIDONIUM Linn. Celandine.

Sep. 2. *Pet.* 4. *Stigma* 2-lobed. *Pod* superior, linear, 1-celled, 2-valved, *valves* separating from the base upwards. *Seeds* crested.—Named from χελιδων, a swallow; probably from the plant flowering about the time of the arrival of those birds.

1. *C. majus* L. (*common C.*) *E. B. t.* 1581.

Waste places, especially near towns and villages. 4. 5—8. — About 2 ft. high, slightly hairy, brittle, full of a yellow fetid juice. *Leaves* pinnate, with about 5 decurrent segments, which are broadly ovate, lobed, and crenate, sometimes jagged. *Flowers* in long-stalked umbels, yellow, rather small. *Sepals* glabrous. *Pod* long, somewhat turgid.

ORD. V. FUMARIACEÆ *De Cand.*

Sepals 2, deciduous or obsolete. *Petals* 4, more or less united, one or two of them gibbous or spurred at the base. *Stamens* 6, in two bundles. *Ovary* 1, with two opposite parietal *placentas*. *Style* filiform. *Stigma* lobed. *Fruit* dry, indehiscent, with one or two seeds; or a pod with two valves and many seeds. *Seeds* glossy, with a fleshy *albumen* and *embryo* at its base.—Herbs of temperate climates, with brittle stems and watery juice, slightly bitter and diaphoretic.—*Hypecoüm* has four distinct *stamens* and a different kind of *corolla*, but is now usually referred here.

1. FUMARIA. Fruit roundish, 1-seeded. Seeds not crested.

2. CORYDALIS. Fruit elongated, many-seeded. Seeds with a crest.

1. FUMÁRIA *Linn.* Fumitory.

Pet. 4, one of them gibbous or spurred at the base. *Ovary*, 4-ovuled. *Fruit* indehiscent, 1-seeded, the *style* deciduous. *Seeds* without a crest.—Named from *fumus*, smoke, on account it is said of the smell.

1. *F. capreolata* L. (*rampant F.*); sepals broadly oval scarcely acute toothed at the base entire above as broad as the tube of the corolla and often half its length, fruit globose obtuse, segments of leaves flat. *E. B.* t. 943.

Corn-fields, gardens, hedges, and road-sides, frequent. ☉. 5—9. — A very variable plant, best distinguished by its large *petals* and *calycine leaves*. *Stems* generally climbing, sometimes only diffuse. *Leaves* bipinnate; *segments* usually very broad, rarely cuneate oblong, but never linear or grooved. In the south of Europe the fructiferous *pedicels* are usually remarkably recurved, in Germany and the south of England they are only arched backwards, and in Wales and Scotland often straight and patent: this last form is the *F. agraria* of British collectors, but not apparently the true species of that name. The *fruit* is often in some soils more or less tuberculated, but usually quite even. Lower *petal* linear or gradually dilated from the middle to the point, not merely dilated near the point as in the next species.

2. *F. officinális* L. (*common F.*); sepals ovato-lanceolate acute sharply toothed narrower than the tube of the corolla, fruit globose very abrupt or obcordate.—*α.* erect, very glaucous, segments of leaves narrow usually grooved. *F. officinális*, *E. B.* t. 589.—*β.* diffuse or climbing, green, segments of leaves flat broad.

α. Dry fields and road-sides, common.—*β.* also frequent in highly cultivated fields and gardens. ☉. *Fl.* through the summer.

3. *F. Vaillantii* Loisl. (*Vaillant's F.*); sepals very minute, fruit obovate-globose slightly pointed, pedicel twice as long as the bract, segments of leaves narrow flat glaucous. *E. B. S.* t. 2877.

Fields; rare. Kent, Essex, Cambridgeshire, &c. We have now reason to believe that the English plant is the same as Loiseleur's; but we still entertain doubts of its being truly distinct from the next, the only essential difference, if that be constant, being in the greater length of the pedicel.

4. *F. parviflora* Lam. (*least-flowered F.*); sepals very minute, fruit obovate-globose slightly pointed or blunt, pedicel as long as the bract, segments of the leaves linear channelled glaucous. — *a.* flowers rose-coloured, *E. B. t.* 590.—*β.* flowers white tipped with dark purple. *F. parviflora* DC.

Fields; rare. ☉. 6—9.—The more common of these two *vars.* is that with white flowers.

5. *F. micrantha* Lag. (*small-flowered F.*); sepals peltate orbicular somewhat cordate at the base inciso-dentate at the margin concave at the back about twice shorter than the corolla and one and a half or twice broader, fruit globose subapiculate, pedicels shorter than the bracts, segments of the leaves narrow linear grooved. *Hook. Ic. Pl. t.* 363. *E. B. S. t.* 2876.

About Edinburgh, and in several other localities in the east of Scotland. Dover, Guildford, and New Burnham (Norfolk), in England. ☉. 6.—9.

2. CORÝDALIS *De Cand.* *Corydalis*.

Pet. 4, one of them gibbous or spurred at the base. *Ovary* many-ovuled. *Pod.* 2-valved, compressed, many seeded. Seeds with a crest.—Named from *κορυδαλις*, the Greek name for the *Fumitory*, with which the present genus was, till lately, united.

1. *C.* sólida* Hook. (*solid-rooted C.*); stem simple erect with a scale beneath the lower leaf, leaves 3—4 biternate their segments cuneate or oblong, and as well as the bractæ cut, root tuberous solid, style persistent. *Fumaria L.*: *E. B. t.* 1471.

Groves and thickets. At Kendal (an old garden). Wickham, Hampshire (perhaps wild); and near Birmingham. *Æ.* 4, 5.—*Flowers* large, purplish. *Leaves* glaucous. *Seeds* with a crest, in germination showing only one ovate *cotyledon*.

2. *C.* lutea* DC. (*yellow C.*); stem angular erect, leaves bipinnate, segments broadly cuneate cut or trifid, bractæ minute, style deciduous, pods nearly cylindrical shorter than the pedicels, root fibrous. *Fumaria L.*: *E. B. t.* 588.

On old walls in many places, but only where it had escaped from cultivation. *Æ.* 5—8.—*Flowers* yellow. *Seeds* with a concave crest, in germination with two lanceolate *cotyledons*.

3. *C. claviculata* DC. (*white climbing C.*); stem much branched climbing, leaves pinnate, pinnæ stalked ternate or pedate, seg-

ments elliptical entire, petioles ending in tendrils, pedicels very short scarcely so long as the minute bractes, root fibrous, style persistent. *Fumaria* L. : *E. B.* t. 103.

Bushy and shady places, in gravelly or stony soil. In Scotland, most abundant on walls and roofs of houses, especially in the Highlands. 4. 6, 7.—*Stems* long, very slender. Whole plant extremely delicate. *Flowers* small, pale yellow almost white; *seeds* with a concave crest, in germination with two oblong lanceolate *cotyledons*.

ORD. VI. CRUCIFERÆ Juss.

Calyx of 4 sepals. *Petals* 4. *Stamens* usually 6 and tetradynamous; 2 solitary, alternate with the petals; 4 opposite to them in 2 pairs; rarely only 4 and equal. *Ovary* and *Style* 1; *hypogynous glands* at the base of the solitary stamens. *Pericarp* usually a *pouch* or *pod*, 2- rarely 1-celled, 2-valved the valves opposite the shorter stamens; sometimes valvless. *Seeds* on marginal placentas (between the longer stamens) without *albumen*. *Radicle* curved. *Cotyledons* plane, parallel to the dissepiment and with their edges applied to the radicle (*accumbent* o=)¹; or plane, with their back turned to the radicle (*incumbent* o||); or folded and embracing the radicle (*conduplicate* o>>).—*Herbs*. *Leaves* alternate. *Flowers* generally in corymbs which at length become racemes.—A most important *Natural Order*, many of the plants which it contains being cultivated as esculents; as the *Cabbage*, *Turnip*, *Mustard*, and *Cresses* of various kinds, *Horse-radish*, &c. They contain an essential oil which renders them stimulating, while their seeds yield a fine and mild oleaginous fluid, as *Rape*; and they are antiscorbutic. The mustard-seed is used for sinapisms. Most kinds contain sulphur and nitrogen, and give out in decaying a smell resembling that of animal matter.

I. SILICULOSÆ. Fruit short, scarcely more than a half longer than broad.

A. *Fruit without valves; or 1-celled, 1-seeded.*

- 17. CAKILE. Fruit of 2 joints placed end to end, upper angular deciduous 1-seeded, lower sometimes sterile. Cot. o=.
- 32. CRAMBE. Fruit of 2 joints placed end to end, upper globose deciduous 1-seeded, lower stalk-like. Cot. o>>.
- 26. SENEBIERA. Fruit with 2 cells placed side by side, each 1-seeded. Cot. o||.
- 27. ISATIS. Fruit 1-celled, 1-seeded, with keeled valves. Cot. o||.

¹ The radicle points to or is next the placenta, and, unless accidentally twisted, must be parallel to the dissepiment. When, therefore, the cotyledons are flat, with their edges turned to the placenta, they are *truly accumbent*, although *apparently incumbent*. But when they are linear, or the seed is nearly terete, their position and that of the seed itself may be altered by a twist of the seed-stalk, in which case it is preferable to be guided solely by the apparent relative position of the radicle and cotyledons in the detached seed.

B. *Pouch with a dissepiment and 2 valves.** *Style flat, winged. Dissepiment of pouch oval.*

31. VELLA. Style twice as long as the turgid pouch. Cot. o>>.

** *Style nearly terete.*† *Pouch laterally compressed; dissepiment narrow, oblong, or linear: valves keeled or winged.*

23. CAPSELLA. Pouch obcordato-cuneate; valves keeled wingless; cells many-seeded. Cot. o||.

13. THLASPI. Pouch emarginate; valves winged; cells 2—8-seeded. Filaments simple. Cot. o=.

14. HUTCHINSIA. Pouch entire; cells 2-seeded. Filaments simple. Cot. o=.

15. TEESDALIA. Pouch emarginate; cells 2-seeded. Filaments with a scale. Cot. o=.

16. IBERIS. Cells of pouch 1-seeded. Petals unequal. Cot. o=.

25. LEPIDIUM. Cells of pouch 1-seeded. Petals equal. Cot. o||, or sometimes o=.

†† *Pouch dorsally compressed or globose; dissepiment oval, in the broadest diameter.*

10. COCHLEARIA. Pouch turgid; valves 1-nerved. Style permanent. Seeds many in each cell. Cot. o=. Petals white.

9. ARMORACIA. Pouch turgid; valves nerveless. Style permanent. Seeds many in each cell. Cot. o=. Petals white or yellow.

24. SUBULARIA. Pouch turgid. Style deciduous. Seeds many in each cell. Cot. o||. Petals white.

12. DRABA. Pouch compressed or valves slightly convex. Seeds many in each cell. Cot. o=.

22. CAMELINA. Pouch inflated; valves 1-nerved. Style permanent. Seeds many in each cell. Cot. o||. Petals yellow.

11. KONIGA. Pouch compressed; cells 1-ovuled, 1-seeded. Filaments simple. Hypogynous glands 8. Cot. o=. Petals white.

11^a. ALYSSUM. Pouch compressed; cells 2-ovuled, usually 2-seeded; valves convex in the middle, flat at the edges. Seeds not margined. Filaments (the two shorter ones or all) with a tooth, rarely simple. Hypogynous glands (or subulate processes, when all the filaments are simple) 4. Petals emarginate (yellow). Cot. o=.11^b. BERTEROA. Pouch compressed; cells about 6-seeded. Two shorter filaments with a tooth. Hypogynous glands 4. Petals (white) tripartite. Cot. o=.

II. SILIQUOSÆ. Fruit usually much longer than broad, rarely only twice as long.

C. *Pods 2-valved, with a dissepiment.** *Style sometimes very short, sometimes elongated, but not forming a stout conical beak. Cot. o= or o||.*† *Calyx equal at the base, or very slightly bigibbous.*

6. DENTARIA. Pods flat, linear; valves nerveless, usually separating elastically. Style filiform. Seed-stalks broad. Cot. o=.

7. CARDAMINE. Pods flat, linear; valves nerveless, usually separating elastically. Style short or none. Seed-stalks slender. Cot. o=.

5. ARABIS. Pods compressed, long, linear; valves 1-nerved, or with several longitudinal coarse veins. Seeds in one row. Cot. o==.
4. TURRITIS. Pods compressed, long, linear; valves 1-nerved. Seeds in two rows. Cot. o==.
12. DRABA. Pods compressed, oblong; valves 1-nerved. Seeds in 2 rows. Cot. o==.
3. BARBAREA. Pods linear, 4-angled; valves 1-nerved. Seeds in a single row. Cot. o==.
8. NASTURTIUM. Pods oblong or linear, terete; valves very convex, reticulately veined, nerveless. Seeds irregularly in 2 rows. Cot. o==.
19. SISYMBRIUM. Pods linear, terete, or slightly angled; valves 3- (or rarely 1-) nerved. Seeds not striated; stalks slender. Calyx slightly spreading. Cot. o||.
20. ALLIARIA. Pods long, linear, terete; valves slightly 3-nerved. Seeds striated; stalks broad. Cot. o||.
21. ERYSIMUM. Pods linear, 4-angled; valves 1-nerved. Seed-stalks slender. Calyx erect. Cot. o||.

†† *Calyx conspicuously bisaccate at the base. Valves of pod nerved.*

21. ERYSIMUM. Stigma nearly simple. Pod 4-angled. Cot. o||.
2. CHEIRANTHUS. Stigma on a style, lobes patent (or capitate). Cot. o==.
1. MATTHIOLA. Stigma sessile, lobes connivent, either thickened or horned at the back. Cot. o==.
18. HESPERIS. Stigma nearly sessile; lobes elliptical, obtuse, connivent. Cot. o||.
- 18^a. MALCOLMIA. Stigma conical acute. Pod cylindrical. Cot. o||.

** *Style forming a stout conical, often seed-bearing beak. Cot. o>>.*

28. BRASSICA. Calyx erect. Pod terete or angled. Seeds in a single row, globose.
29. SINAPIS. Calyx spreading. Pod terete or angled. Seeds in a single row.
30. DIPLTAXIS. Calyx spreading. Pod compressed. Seeds in two rows.

D. *Fruit without valves or a dissepiment.*

33. RAPHANUS. Fruit divided transversely into several 1-seeded joints. Calyx erect. Cot. o>>.

SUB-ORD. I. PLEURORRHIZÆ. Cotyledons accumbent. (o==)

Tribe I. ARABIDÆÆ. *Pod elongated; valves flat, concave, or slightly keeled: dissepiment narrow, in the broadest diameter. Cot. o=(Gen. 1—8.)*

1. MATTHIOLA Br. Stock.

Pod (rounded or compressed) crowned with the connivent 2-lobed *stigma*, the lobes either thickened at the back² or with a

¹ Some species of *Draba* almost agree with this character.

² It often happens, when this is the case, that the radicle is slightly twisted so as to be applied to the back of the cotyledons; but, as they are parallel to the dissepiment, they are really accumbent.

horn at the base. *Cal.* erect, 2 opposite sepals saccate at the base. Longer *filaments* dilated.—Named in honour of an Italian physician, *P. A. Matthiolum*.

1. *M. incána* Br. (*hoary shrubby S.*); stem shrubby at the base upright branched, leaves lanceolate entire hoary, pods cylindrical without glands. *Cheiranthus L.*: *E. B.* t. 1935.

Cliffs to the eastward of Hastings; but not wild. Ventnor, Isle of Wight. 4. 4–6.—The origin of the Stock Gilly-flower of our gardens, where it is generally treated as an annual or biennial.

2. *M. sinuáta* Br. (*great-sea S.*); stem herbaceous spreading, leaves downy, lower ones sinuate, pods compressed muricated. *Cheiranthus L.*: *E. B.* t. 462.

Sandy shores of Wales, Cornwall, Jersey, and Guernsey. ♂. 5–8.—*Flowers* purple, large, fragrant at night. Our two British species have no point or horn at the base of the stigma.

2. CHEIRANTHUS Linn. Wall-flower.

Pod compressed or 2-edged. *Cal.* erect, 2 opposite sepals saccate at the base. *Stigma* placed on a *style*, 2-lobed, the lobes patent or capitate. *Hypogynous glands* none between the longer stamens.—Named perhaps from the Arabic *Kheyry*, not however originally applied to this genus; or rather from *χείρ*, the *hand*, and *ανθος*, a *flower*, because from its fragrance one delights to carry it in the hand.

1. *C. Cheiri* L. (*common W.*); leaves lanceolate acute entire with bipartite adpressed hairs, pods linear, lobes of the stigma patent, stem shrubby at the base. *C. fruticosus L.*: *E. B.* t. 1934.

Old walls. 4. 5, 6.—A *variety*, with larger, more highly coloured and more flaccid *petals*, is commonly cultivated in gardens.

3. BARBARÉA Br. Winter-cress.

Pod 4-angled and somewhat 2-edged; *valves* with a middle nerve. *Seeds* in a single row. *Calyx* erect, equal at the base. *Glands* between the shorter filaments and the germen, and a subulate one between each pair of the longer ones.—Name: this plant was formerly dedicated to *St. Barbara*.

1. *B. vulgáris* Br. (*bitter W., yellow Rocket*); lower leaves lyrate the superior ones obovate toothed or pinnatifid at the base, pods linear bluntly 4-angled acuminate much thicker than the pedicel.—*a.* uppermost side lobes of the radical leaves as long as the transverse diameter of the terminal roundish or somewhat cordate terminal lobe. *Erysimum Barbarea L.*: *E. B.* t. 443.—*β.* side lobes of the radical leaves all small and much

shorter than the transverse diameter of the oblong-ovate or cordate terminal lobe. *B. stricta* Andr.

Pastures and hedges, frequent. 4. 5—8. — Stem 1—2 feet high, stout, furrowed, branched, glabrous. *Petals* yellow, usually the length of the calyx, or in what is called *B. arcuata*, twice as long. *Style* conspicuous.

2. *B.*præcox* Br. (*early W.*); lower leaves lyrate or pinnate, upper ones pinnatifid, segments linear oblong entire, pods linear compressed obtuse scarcely thicker than the pedicel. *Erysimum* *E. B.* t. 1129.

Waste places in Devonshire and elsewhere. ♂. 4—10. — About 1—2 feet high; more slender than the last in every part; *flowers* smaller; *Pods* longer. *Style* very short.

4. TURRITIS Linn. Tower-Mustard.

Pod elongated, compressed, 2-edged; *valves* nerved or keeled. *Seeds* in a double row. *Calyx* nearly equal at the base. — Named from *turris*, a tower; the leaves becoming gradually smaller upwards, so that the plant assumes a pyramidal form.

1. *T. glabra* L. (*long-podded T.*); radical leaves toothed hairy, cauline ones amplexicaul entire glabrous. *E. B.* t. 777.

Banks and road-sides in many parts of England, but not general; apparently most frequent in Norfolk and Suffolk. Bowling Bay, Partick, and Redgorton (Perthshire), in Scotland. ☉. 5—7. — Stem 1—2½ feet high. *Leaves* oblong-lanceolate, glaucous, radical ones toothed or sinuate at the base, cauline ones sagittate. *Flowers* yellowish-white. *Pods* long, erect. In this genus there are no glands between the larger stamens.

5. A'RABIS Linn. Roek-Cress.

Pod linear, compressed, crowned with the nearly sessile stigma; *valves* nerved or coarsely veined. *Seeds* in one row. *Calyx* erect.—Name from *αραβίς*, applied by Dioscorides to *Lepidium Draba*.

1. *A. stricta* Huds. (*Bristol R.*); leaves toothed obtuse hispid, radical ones sinuate toothed, cauline leaves sessile, stems hairy at the base, petals cuneate-linear erect, pods erect, their valves 1-nerved. *E. B.* t. 614.

Rare; St. Vincent's rocks, near Bristol, among limestone. 4. 3—5.—Habit of *Sisymbrium Thalianum*, but perennial; *root-leaves* strongly ciliated with frequently forked or trifid hairs; *flowers* twice the size; *stem-leaves* few, small.

2. *A. petræa* DC. (*alpine R.*); radical leaves lyrato-pinnatifid stalked, cauline ones petioled nearly undivided, petals obovate clawed spreading, pods spreading twice as long as the pedicels,

their valves 1-nerved. *A. hispida* L. *Cardamine hastulata*. *E. B.* t. 469.

Alpine rocks in North Wales. Frequent on the high mountains of the west and north of Scotland, particularly the Cairngorm range. Hebrides, especially Skye. γ . 6—8. — *Plant* 3—6 inches high, slender, glabrous or hairy. *Flowers* with a purple tinge.

3. *A. ciliáta* Br. (*fringed R.*); leaves somewhat toothed oval glabrous ciliated, radical ones nearly sessile obtuse, those of the simple stem semi-amplexicaul or rounded at the base, pods nearly erect, their valves 1-nerved. *Turritis alpina* L.: *E. B.* t. 1746.

By the sea-side at Rinville, Cunnamara, Ireland. δ . 7, 8. — *Stem*. 4—6 inches high. *Root-leaves* several, oval, or obovate-oblong, obtuse; cauline ones small.

4. *A. hirsúta* Br. (*hairy R.*); leaves all hispid dentate, cauline ones semi-amplexicaul, pods erect straight, their valves 1-nerved. *Turritis* L.: *E. B.* t. 587.

Walls, rocks, and banks: frequent in many parts of England and Scotland. δ . 6—8. — One foot or more high, erect, stiff. *Stem* rough with spreading hairs, bearing many leaves. *Petals* small, white, erect.

5. *A. Turrita* L. (*Tower Wall-cress*); cauline leaves amplexicaul, pods recurved flat and linear with the margins thickened and valves coarsely veined longitudinally not nerved, bractees foliaceous. *E. B.* t. 178.

Walls of Trinity and St. John's Colleges, Cambridge; and Magdalen College, Oxford, δ . 5. — *Seeds* with a membranaceous margin.

6. DENTÁRIA Linn. Coral-root.

Pod narrow-lanceolate, tapering; the *valves* flat, generally separating elastically, nerveless. *Seed-stalks* broad. — Name: *dens*, a *tooth*, from the tooth-like scales of the root.

1. *D. bulbifera* L. (*bulbiferous C.*); stem quite simple, lower leaves pinnate, upper ones simple with axillary bulbs. *E. B.* t. 309.

Woods and shady places, rare. Sussex; Middlesex. Near Dupplin and banks of the Esk, Scotland, but scarcely wild. γ . 4, 5. — *Rhizome* creeping, bearing thick scales or tooth-like processes. *Stem* 1—1½ foot high. *Leaflets* lanceolate as are the upper leaves, serrate, somewhat fleshy; *leaves* often having a small bulb in their axils. *Flowers* rather large, purple.

7. CARDAMÍNE Linn. Bitter-Cress.

Pod linear, the *valves* flat, generally separating elastically,

nerveless. *Seed-stalks* slender.—Name: καρφία, the heart, and ἐπαύω, to overpower; from its supposed qualities.

1. *C. amara* L. (*large-flowered B.*); leaves pinnate, radical leaflets roundish, cauline ones dentato-angled, style oblique stigma rather acute, stem rooting at the base, petals obovate *E. B. t.* 1000.

Wet meadows, near rivulets; not unfrequent. *4.* 4—6.—One foot high. Well distinguished from the following by the broad angled or toothed leaflets of its upper leaves, and the large white flowers, which have purple anthers, and stamens almost as long as the petals.

2. *C. pratensis* L. (*common B.*); leaves pinnate, radical leaflets roundish dentate, cauline ones lanceolate nearly entire, style straight, stigma capitate, petals obovate. *E. B. t.* 776.

Moist meadows, abundant. *4.* 4—6.—Stem 1—2 feet high. Flowers large, blush-coloured; sometimes found double, and then the leaflets occasionally produce new plants, on coming in contact with the ground, while still attached to the parent plant. Stamens half as long as the petals.

3. *C. impatiens* L. (*narrow-leaved B.*); leaves pinnate, leaflets lanceolate somewhat cut or entire, petioles of the stem-leaves with fringed auricles at their base, petals linear or none. *E. B. t.* 80.

Moist rocks, rare; Derbyshire, Westmoreland, and Cumberland. By the Wye above Tintern. Godalming, Surrey. Near the falls of the Clyde and banks of the Doune, Scotland. ☉. 5—8.—Stem 1—1½ foot high. Well distinguished by the stipule-like auricles at the base of each petiole. Flowers minute, white.

4. *C. hirsuta* L. (*hairy B.*); leaves all pinnate without auricles, radical leaflets roundish angled or toothed petiolate, stem-leaflets narrower nearly sessile, petals oblong, stigma blunt, pods erect.—*α.* smaller, pedicels erect, stamens often 4, style very short. *E. B. t.* 492.—*β.* larger, pedicels patent, stamens, usually 6, style as long as the breadth of the pod. *C. flexuosa* With. *C. sylvatica* Linn.

Moist shady places, abundant. ☉. 3—8 — Varying much in size and luxuriance, according to soil and situation, from 4 inches to a foot or more in height. Stamens 6 in both varieties, or 4 in depauperated specimens.

(*C. bellidifolia* L., *E. B. t.* 2355, with simple entire leaves, is unknown, at least in the present day, as a native either of Scotland or Ireland.)

8. NASTÚRTIUM Br. Water-Cress. Yellow-Cress.

Pod nearly cylindrical (sometimes short); valves concave, neither nerved nor keeled. Seeds in a double row. Calyx patent.—Named from *nasus tortus*, a convulsed nose, an effect

supposed to be produced by the acrid and pungent quality of this plant.

1. *N. officinale* Br. (common *W.*); leaves pinnate, leaflets ovate subcordate sinuato-dentate, petals (white) twice as long as the calyx, pod linear. *Sisymbrium Nasturtium* L.: *E. B.* t. 855.

Brooks and rivulets frequent. 4. 5—10.—A well-known aquatic plant, and an excellent and wholesome salad. *Lower leaves* large, of 5—7 distant leaflets, the terminal one the largest and roundest; *cauline leaflets* subovate, sometimes oblong, all rather succulent, glabrous, more or less waved or toothed. *Pods* about an inch long, about as long as the pedicels, curved upwards. *Hypogynous glands* 4.

2. *N. sylvestre* Br. (creeping *Y.*); leaves pinnate, leaflets lanceolate cut, those of the uppermost leaves nearly entire, rhizome creeping, petals (yellow) twice as long as the calyx, pods narrow oblong or linear. *Sisymbrium* L.: *E. B.* t. 2324.

Water-sides and waste places, but not common; very rare in Scotland. 4. 6—8.—*Rhizomes* much creeping. *Stem* 1 foot high, angular, branched. *Rachis* often slender and zigzag. *Pedicels* patent; *Pods* also patent or curved a little upwards, varying from 3 to 9 lines long (*DC.*), usually about the length of the pedicels, but often longer, sometimes shorter. *Hypogynous glands* 6.

3. *N. terrestre* Br. (*Marsh Y.*); leaves lyrate-pinnatifid unequally toothed, root small fibrous, petals (yellow) not longer than the calyx, pods oblong turgid and the septum 2—4 times longer than broad. *N. palustre* *DC.*: *Benth.* *Sisymbrium terrestre.* *E. B.* t. 1747.

Watery places. ☉. 6—10.—One foot high, branched. *Pods* about as long as the spreading pedicels, ascending. Distinguished chiefly from the last by wanting a creeping rhizome, pinnatifid not pinnate leaves, minute petals, and more turgid pods.

Tribe II. ALYSSINÆÆ. *Pouch with the dissepiment in the broadest diameter; valves flat or concave. Cot. 0=.* (Gen. 9—12.)

9. *ARMORÁCIA* *Rupp.* Horse-Radish. Water-Radish.

Pouch elliptical or globose, many-seeded: the *valves* turgid, not nerved. *Filaments* simple. *Hypogynous glands* 6. *Seeds* not margined. *Calyx* patent.—So named by the Romans from *Armorica*, or Brittany, where it was supposed to grow abundantly.

1. *A. amphibia* Koch (*great W.*); leaves oblong pinnatifid or serrate, root fibrous, petals (yellow) twice as long as the calyx, pouch 2—3 times shorter than the pedicel, stigma capitate. *Nasturtium* Br.: *Benth.* *Sisymbrium* L.: *E. B.* t. 1840.

Watery places; not uncommon in England. 4. 6—9. — *Stems* 2—3 feet high. If any *leaves* grow under water, they are deeply pinnatifid, otherwise only deeply serrate. *Pedicels* usually deflexed. *Style* as long as the oblong *germen*. *A. natans* (*Nasturtium* DC.) is closely allied; so also is *A. Americana* (*Nasturtium natans* Torr. and Gr.), but it has the white petals and peltate stigma of the next.

2. *A. *rusticána* Baumg. (*common H.*); radical leaves oblong on long foot-stalks crenate, cauline ones elongato-lanceolate serrate or entire, root long cylindrical, petals (white) twice as long as the calyx, pouch 2—3 times shorter than the pedicel, stigma peltate. *A. Rivini Rupp.* *Cochlearia Armoracia L.: E. B. t.* 2323.

Said to be wild near Swansea; also in some parts of the north of England, and in Scotland, but too often the outcast of gardens. 4. 5. — *Roots* long, running deep into the ground, well known at our tables, and esteemed for their pungent flavour. *Leaves* much veined. *Fruit* seldom perfect.

10. COCHLEÁRIA Linn. Scurvy-Grass.

Pouch oval or globose, many-seeded; the *valves* turgid, with a prominent nerve in the middle. *Filaments* simple. *Hypogynous glands* 4. *Seeds* not margined, tuberculate. *Calyx* patent.—Name: *cochlear*, a *spoon*, from the shape of the leaves.

1. *C. officinális L. (common S.)*; pouch globose ovate or elliptical, radical leaves cordate at the base, usually reniform entire or sinuate, sometimes hastate.—*α.* larger, cauline leaves nearly all sessile; usually oblong or oval sinuate. *E. B. t.* 551.—*β.* smaller, lower stem-leaves usually deltoid and stalked. *C. Groenlandica L.: E. B. t.* 2403.—*γ.* radical leaves sometimes and cauline ones nearly all hastate stalked. *C. Danica L.: E. B. t.* 696.

α. and *γ.* on the sea-coast, in a stony or muddy soil, frequent; *β.* on the Highland mountains. ☉ or 4? 5—8.—The common variety exhibits, on the shores of the Frith of Clyde, all the variations noticed in the shape of the pouch, which is, moreover, often as large and veiny as in the figure of *C. Anglica* in *E. B. t.* 552. The true radical leaves of our *var. γ.* are perhaps, always reniform; but having decayed, or been broken off, the lower cauline ones are mistaken for them.

2. *C. Anglica L. (English S.)*; pouch elliptical (large) veiny, radical leaves petiolate ovate or oblong entire mostly acute or tapering at the base sometimes subcordate, cauline leaves mostly sessile oblong sinuate or with a few coarse teeth. *E. B. t.* 552.

Margins of large rivers, at a distance from the open sea, perhaps not uncommon. Thames between London and Woolwich; Severn, Wye, and Avon above Bristol; Mersey near Warrington. Cree near

Newton Stewart, Scotland. ☉. 5—7.—*Pouch* generally larger than in the last, but certainly not more elliptical or veiny than what we refer to that species; *leaves* narrower and often more entire; *flowers* larger. The *radical leaves* are sometimes cordato-ovate, but usually oblong, never, so far as we have observed, broadly reniform or angled; but perhaps this and many other supposed species are only forms of the variable *C. officinalis*.

11. KÓNIGA Br. Koniga.

Pouch subovate; *valves* nearly plane; *cells* 1-ovuled and 1-seeded; seed-stalks with their base adnate to the dissepiment. *Calyx* patent, deciduous. *Petals* entire (white). *Hypogynous glands* 8. *Filaments* simple.—Name: revived by Mr. Brown, from the *Konig* of Adanson, and altered by him to *Koniga* in order to commemorate the important services rendered to Botany by Mr. König of the British Museum.

1. K. **marítima* Br. (*Sea-side K.*, or *sweet Alyssum*). *Alyssum* Willd.: *E. B.* t. 1729: *Benth.* *Clypeola* L.

Near the sea, but only where escaped or ejected from gardens. Budleigh Salterton, Devon; on the garden-wall at Newlyn, Mount's Bay, Cornwall; near Aberdeen. 4. 8, 9.—*Stem* somewhat woody at the base. *Leaves* linear-lanceolate, hoary with bipartite adpressed hairs. *Flowers* white and fragrant, honey-scented. The plant is much cultivated.—Mr. Brown admits another species with several alternate ovules in each cell; and some foreign authors have still more extended the genus. In several genera, as *Arabis*, the number of hypogynous glands varies from 4 to 8; so that perhaps future observations may again reduce the genus to *Alyssum*.

(*Alyssum calycinum* L., *E. B. S.* t. 2853, has been enumerated as a British species; but it is unquestionably a plant recently introduced, either with seed-corn or ballast, though now established in several parts of England and Scotland. It has simple filaments, and long subulate processes instead of hypogynous glands, by which, and its persistent calyx, it is known from the rest of the genus. *Berteroa incana* DC., or *Alyssum incanum* L. and *Fursetia incana* Br., said to have been found near Lewes and Weymouth, has also no claims to be considered indigenous.)

12. DRÁBA Linn. Whitlow-grass.

Pouch or *pod* entire, oval or oblong; *valves* plane or convex, 1-nerved at the base, nerved or veiny upwards; *cells* many-seeded. *Seeds* not margined. *Filaments* simple.—Named from *ἀκρίη*, *acrid*, as are the leaves of many of this tribe.

* *Petals* deeply cloven, white. *Eróphila* DC.

1. D. *vérna* L. (*common W.*); *scapes* naked, *leaves* lanceolate somewhat toothed hairy.—*α.* pouch compressed. *E. B.* t. 586. *Erophila vulgaris* DC.—*β.* pouch swollen.

Frequent.—*α.* on walls, rocks, and dry banks.—*β.* on shelving rocks on Ben Lawers, above the lake. ☉. 3—6.—The var. *β.* is a very singular one, found by ourselves and others, for many years, in the above locality, and never seen to vary: the *pouch* is as much inflated as that of *Subularia*.

** *Petals slightly emarginate, yellow. Style elongated. Aizópsis DC.*

2. *D. aizóides* L. (*yellow alpine W.*); scapes leafless glabrous, petals twice the length of the calyx, leaves lanceolate rigid glossy keeled and ciliated. *E. B. t.* 1271.

Walls and rocks at Pennard Castle, near Swansea. *γ.* 3, 4.—Remarkable for its bright yellow flowers and glossy leaves margined with hairs. The cultivated plant of this name is a variety with the *stamens* constantly scarcely longer than the *calyx*, and is *D. brachystemon* DC.: the Welsh plant has the *stamens* the length of the petals, as in wild Continental specimens, and the *pouch* glabrous.

*** *Petals slightly emarginate or entire, white. Style very short.*

3. *D. rupéstris* Br. (*Rock W.*); scape leafless or with rarely one leaf, pouch or pod oblong-oval, leaves plane lanceolate hairy. *D. hirta E. B. t.* 1338 (not *Linn.*).

Mountain summits; rare. Ben Lawers, Cairngorm, and Ben Hope; Scotland. *γ.* 7.—The slender perennial *root* penetrates deep among mosses and the crevices of rocks, bearing above many short *branches*, each crowned with a tuft of lanceolate, soft, plane, entire, or rarely obscurely toothed, hairy *leaves*; their margins ciliate; the hairs mostly simple, sometimes branched, on the surface not unfrequently stellate. *Scapes* several from the same root, 1—1½ inch high, slender, simple, stellato-pubescent. *Pedicels* short, pubescent. *Cal.* mostly downy. *Pouch* oval-oblong, pubescent. In cultivation the leaves become more glabrous, the hairs on the margin longer and more rigid, and the scape 3—3½ inches high.

4. *D. incána* L. (*twisted-podded W.*); cauline leaves several lanceolate toothed hoary with starry pubescence, pod oblong-lanceolate somewhat twisted. *E. B. t.* 388.

Mountain rocks, in much less elevated situations and far more frequent than the last; in Wales, the N. of England, and Scotland. *♂.* 6, 7.—*Stem.* 4—6 inches to a foot or more high, sometimes throwing out lateral *branches*. Lower *leaves* frequently entire, upper ones deeply toothed, almost cut, acute. *Pods* erect, mostly glabrous.

5. *D. murális* L. (*Speedwell-leaved W.*); stem branched, leaves ovate obtuse amplexicaul toothed, pouch patent glabrous. *E. B. t.* 912.

Limestone mountainous countries, on rocks and walls. Craven, Yorkshire; Warden hills, Bedfordshire; Emborough, Somersetshire. About Forfar, Edinburgh, and Chelsea, where it has escaped from gardens. Blarney Castle, Ireland. ☉. 4, 5.—Six inches to one foot high. *Leaves* scabrous. *Pouch* elliptical, shorter than the pedicel.

Tribe III. THLASPIDEÆ. *Pouch compressed, with the dissepiment very narrow in the narrowest diameter, valves keeled or winged. Cot. 0=.* (Gen. 13—16.)

13. THLĀSPI Linn. Penny-Cress.

Pouch laterally compressed, emarginate; *valves* winged at the back; *cells* 2—8-seeded.—Named from *πλαω*, to *flatten*; on account probably of its compressed *seed-vessels*.

1. *T. arvensē* L. (*Field P.* or *Mithridate Mustard*); *pouch* orbicular with a broad longitudinal wing, wing with a slender marginal nerve, *cells* about 6-seeded, *seeds* concentrically striate, *leaves* arrow-shaped toothed glabrous. *E. B. t.* 1659.

Fields and road-sides, in various places; but not common. ☉. 5—7.—One foot high, branched above. *Flowers* extremely small, white. *Pouch* very large, with unusually broad wings.

2. *T. perfoliatum* L. (*perfoliate P.*); *pouch* obcordate with a broad wing above, wing with a marginal nerve, *cells* 4—6-seeded, *seeds* smooth, *style* included within the notch, *cauline leaves* cordate somewhat toothed glabrous. *E. B. t.* 2354.

Limestone pastures; rare. Burford, Oxfordshire; Bourton, Upper Slaughter, and Naunton-Seven-Springs, near Stow-on-the-Wold, Gloucestershire. Stone walls about Kineton, Warwickshire. ☉. 4, 5.—*Raceme* elongated when in fruit.

3. *T. alpestre* L. (*alpine P.*); *pouch* somewhat obovate retuse winged above, nerve of the wing obsolete, *cells* 2—4-seeded, *style* as long as the notch or exserted, *stamens* as long as the petals, *cauline leaves* cordato-sagittate, stem simple. *E. B. t.* 81.—*α.* racemes of fruit elongated, *style* scarcely longer than the notch of the oblong-obovate pouch.—*β.* racemes of fruit oblong, *style* much longer than the notch of the triangular obcordate pouch. *T. occitanum* Jord.—*γ.* racemes of fruit oval or oblong, *style* much longer than the shallow notch of the oboval pouch. *T. virens* Jord.

Mountain pastures, rare.—*α.* Teesdale; Thornhaugh, Northumberland; Glen Isla; Clova.—*β.* Settle, Yorkshire; Llanrwst, Caernarvonshire. *γ.*—Matlock, Derbyshire. 4. 6—8. Upon the above slender distinctions has this species been split into three, *T. occitanum* being intermediate between the extreme forms.

14. HUTCHINSIA Br. (not of Agardh.) Hutchinsia.

Pouch elliptical, entire; the *valves* keeled, without wings; *cells* 2-seeded. *Filaments* simple.—Named in honour of the

late Miss *Hutchins*, of Bantry, Ireland, who explored most successfully the Botany of her native country, and added many new species to its Cryptogamia.

1. *H. petræ'a* Br. (*Rock H.*); leaves pinnate segments entire, petals scarcely longer than the calyx, pouch obtuse at both extremities, stigma sessile. *Lepidium E. B.* t. 111.

Limestone rocks; west of England, and Wales, and Yorkshire Wall of Eltham churchyard, Kent, probably introduced. ☉. 3—5. 2—4 inches high.—This genus has the *pouch* of a *Teesdalia*, but the stamens of *Thlaspi*: the British species has the appearance of the former; while most foreign ones, if they really belong to the genus, have that of the latter.

15. TEESDÁLIA Br. *Teesdalia*.

Pouch emarginate; the *valves* keeled; the *cells* 2-seeded. *Filaments* having a little scale within at the base.—Named in honour of Mr. *Robert Teesdale*, a Yorkshire botanist.

1. *T. nudicaulis* Br. (*naked-stalked T.*); petals unequal. *Iberis E. B.* t. 327.

Sandy and gravelly banks in many places. ☉. 4—6. — *Leaves* almost entirely radical, lyrato-pinnatifid. *Stems* 2—4 inches high, with sometimes 1—2 small entire or cut *leaves*. *Flowers* white, two of the *petals* nearly three times longer than the other two.

16. IBÉRIS Linn. *Candy-tuft*.

Pouch emarginate; *valves* keeled and winged; *cells* 1-seeded. *Petals* unequal.—Named from *Iberia*, or *Spain*, where many of the species grow.

1. *I. amára* L. (*bitter C.*); herbaceous, leaves lanceolate acute somewhat toothed glabrous, flowers racemose, pouch orbicular with a narrow notch. *E. B.* t. 52.

Chalky fields, rare, but either the outcast from gardens or introduced with seed corn; now not unfrequent in Oxfordshire and Berkshire. ☉. 7. — *Stems* spreading, often a foot high. *Leaves* very variable in their toothing. Whole plant, as its name imports, very bitter.

Tribe IV. CAKILINEÆ. *Fruit without valves or a dissepiment, jointed; each joint with one or more seeds, all but the upper one often abortive. Cot. 0=.* (Gen. 17.)

17. CAKÍLE Gært. *Sea-Rocket*.

Fruit short, angular, of 2 1-seeded indehiscient joints; the upper joint deciduous bearing an upright sessile *seed*, the lower one with an abortive or pendulous *seed*. — Name an

old Arabic word, applied probably to this or some allied genus.

1. *C. marítima* Scop. (*purple S.*); joints of the pouch two-edged, the upper one with two teeth at the base, leaves fleshy pinnatifid somewhat toothed. *Bunias Cakile* L.: *E. B. t.* 231.

Sandy sea-shores, frequent. ☉. 6, 7.—Bushy; *branches* crooked and, as well as the whole plant, succulent. *Flowers* purplish, rarely white. *Fruit* thick, fleshy, at length somewhat woody; the upper joint is in reality the *beak* of the fruit, the *pouch* itself being usually abortive.

SUB-ORD. II. NOTORRHIZÆ. Cotyledons incumbent (o||).

Tribe V. SISYMBRIÆ. *Pod* elongated, with the *valves* convex or keeled, *dissepiment* linear. *Cot.* o||. (Gen. 18—21.)

18. HÉSPERIS Linn. Dame's Violet.

Pod 4-sided or 2-edged. *Stigma* nearly sessile; the lobes elliptical, connivent. *Cal.* erect.—Named from *ἑσπερος*, the *evening*; at which time the flowers yield a powerful fragrance.

1. II. *matronális* L. (*common D.*); stem erect, leaves ovato-lanceolate toothed, limb of the petals obovate, pods erect torulose their margins not thickened. *H. inodora* L.: *E. B. t.* 731.

Hilly pastures, in several parts of Great Britain, but perhaps always escaped from cultivation. ☉. 5—7.

(*Malcolmia marítima* Br. has been found near Deal, Kent, by Miss Harvey, and in Jersey by the late Dr. R. Graham, but in neither place truly wild.)

19. SISÝMBRIUM Linn. Hedge-Mustard.

Pod rounded or 6-angular; *valves* convex or 3-angled 3-nerved (rarely with the lateral nerves inconspicuous or wanting). *Hypogynous glands* none between the longer filaments. *Seeds* smooth, their *stalks* slender. *Stigma* entire. *Cal.* slightly spreading, equal at the base.—Name: *σισυμβριον*, given by the ancients to several plants, one of which is supposed to be a kind of cress; perhaps from *συν*, *with*, and *βρωμος*, *food*, because so eaten.

1. *S. officinále* Scop. (*common H.*); pods subulate pubescent close-pressed to the main stalk, leaves runcinate hairy, stem hispid. *Erysimum* L.: *E. B. t.* 735.

Waste places and by way-sides, plentiful. ☉. 6, 7.—One or two feet high, branched. The deep and cut serrate lobes are not always sufficiently decurved to constitute a *runcinate leaf*; the terminal lobe

is very large, roundish in the lower *leaves*, and oblong in the upper ones. *Flowers* very small, pale yellow.

(*S. polyceratum* L. has been found about Bury St. Edmunds, but is certainly not indigenous: in it the pods are subulate as in the last, but spreading and usually three together, and sessile in the axils of a leaf or leaf-like bractea.)

2. *S. I'rio* L. (*broad H., London Rocket*); leaves runcinate toothed and as well as the stem glabrous, pods terete nearly erect. *E. B.* t. 1631.

Waste places, chiefly about London, where it covered the ground immediately after the great fire in 1666. Faulkbourn, Essex. Berwick-upon-Tweed. Dublin. ☉. 7, 8.—*Flowers* yellow. *Pods* 2 inches long, erect, about four times longer than the pedicels.

3. *S. Sophia* L. (*fine-leaved H., or Flix-weed*); leaves doubly or trebly pinnatifid, lobes linear or linear-oblong, petals shorter than the calyx. *E. B.* t. 963.

Waste places, among rubbish: frequent in England, more rare in Scotland. ☉. 6—8.—Two feet high, branched. *Flowers* small, yellow. *Pods* terete, linear, slender, erect, but not adpressed, about three times longer than the somewhat patent *pedicels*.

4. *S. thaliánum* Hook. (*common Thale-cress*); leaves somewhat toothed downy, radical ones oblong subpetiolate, stem branched, pods ascending terete with 4 angles. *Arabis* L.: *E. B.* t. 901: *Benth.*

Walls, dry banks, and gravelly soils, common. ☉. Spring and autumn.—Six to ten inches high, slender, with few *leaves*, and those mostly radical. *Flowers* small, white. *Pods* twice the length of the spreading *pedicels*; valves convex with only one conspicuous nerve, as in *Arabis*, with which it agrees better in habit; but the *cotyledons* are incumbent, and the *Pods* are not compressed; from *Erysimum* it differs by the hairs on the leaves being spreading and not adpressed.

20. ALLIÁRIA Adans. Garlic-Mustard.

Pod rounded; *valves* with one conspicuous nerve and two slender branched nerves or veins. *Hypogynous glands* between the longer filaments. *Seeds* striate, their *stalks* flat and winged. *Stigma* entire. *Cal.* slightly spreading, equal at the base.—Named from *allium*, or *garlic*, which its leaves resemble in their odour.

1. *A. officínalis* DC. (*common G., Jack-by-the-hedge, or Sauce-alone*). *Erysimum Alliaria* L.: *E. B.* t. 796.

Hedge-banks and waste places. ♂. 5, 6. — 2—3 feet high, branched. *Leaves* large, much veined, heart-shaped, stalked, sinuato-dentate. *Flowers* white. *Pods* erect, on spreading *pedicels*. Were it not for the *seed-stalks*, this might be placed in *Sisymbrium*.

21. ERÝSIMUM Linn. Treacle-Mustard.

Pod 4-sided; *valves* 1-nerved. *Hypogynous glands* usually 2 opposite the placentas and between the longer stamens. *Seeds* smooth not margined, their stalk filiform. *Stigma* entire, or emarginate with the lobes patent. *Cal.* erect. (Pubescence adpressed.)—Named from *ερωω*, to cure, on account of the supposed virtues of the plant.

1. *E. cheiranthoides* L. (*Worm-seed T.*); leaves lanceolate entire or slightly toothed with stellato-tripartite hairs, pods nearly erect 2—3 times longer than the spreading pedicels, stigma almost undivided nearly sessile. *E. B.* t. 942.

Fields, gardens, and waste places. ☉. 6—8. — One to two feet high, branched. *Flowers* small, yellow. *Glands* between the larger stamens 2 lobed.

2. *E. * orientale* Br. (*Hare's-ear T.*); leaves cordato-amplexicaul, radical ones obovate, all glabrous glaucous and entire, stigma entire. *Brassica* L.: *E. B.* t. 1804.

Fields and cliffs near the sea; Suffolk, Sussex. ☉. 5—8.—*Flowers* white or cream-coloured. *Calyx* slightly bisaccate at the base. *Glands* wanting between the longer stamens, but the opposite sepals glandular at the base, thus differing from the genus as limited by C. A. Meyer.

Tribe VI. CAMELINEÆ. *Pouch with the valves more or less convex or dorsally compressed, dissimilar oval or oblong.* *Cot. o||.* (Gen. 22—23.)

22. CAMELÍNA Crantz. Gold-of-Pleasure.

Pouch obovate or subovate; *valves* inflated, with a prominent nerve at the base; *cells* many-seeded. *Filaments* simple.—Named from *χαμαι*, dwarf or humble, and *λινον*, flax.

1. *C. * sativa* Cr. (*common G.*); pouch obovate margined, valves hemispherical, stigma simple, calyx erect, leaves lanceolate sagittate. *C. sativa*, *sylvestris*, and *fœtida* Fr. *Alyssum* *E. B.* t. 1254.

Fields, occasionally among flax, with which it has been imported. ☉. 6, 7.—*Stem.* 2—3 feet high, panicled above, usually more or less pubescent. *Leaves* nearly quite entire, sometimes slightly toothed. *Flowers* small, yellow. *Pouches* very large, on long stalks. *Seeds* scabrous.

23. SUBULÁRIA Linn. Awl-wort.

Pouch oval, pointless; *valves* turgid; *cells* many-seeded. *Cotyledons* linear, curved.—Named from *subula*, an awl; the leaves being subulate or awl-shaped.

1. *S. aquática* L. (*water A.*). *E. B.* t. 732.

Shallow margins of alpine lakes, not very frequent. 4. 7.—
Roots of numerous, long, white fibres. *Leaves* few, radical, awl-shaped, 2—3 inches long. *Scape* 3—4 inches high. *Flowers* small, appearing even under water. *Pouch* nearly approaching that of *Draba*, but with more turgid and convex *valves*, having one conspicuous middle nerve, and sometimes two fainter ones. *Embryo* with its *cotyledons* linear, long; and the curvature takes place, not at the very base of the *cotyledons* as in most other *Crucifera*, but above the base, so that a section made below this exhibits the appearance of four *cotyledons* without a radicle.

Tribe VII. LEPIDINÆ. *Pouch* with the *valves* keeled or convex; or fruit short and indehiscent, 2-celled: dissemination very narrow. *Cot.* o||, rarely (in *Lepidium*) o=. (Gen. 24—26.)

24. CAPSÉLLA Vent. Shepherd's Purse.

Pouch laterally compressed, obcordato-cuneate (or elliptical); the *valves* navicular, without wings; *cells* many-seeded.—
 Name: the diminutive of *capsula*, a *capsule* or *little-box*.

1. *C. Bursa Pastoris* DC. (common *S.*); pubescent or hairy, stem-leaves sessile lanceolato-sagittate, pouch obcordato-cuneate. *Thlaspi* L.: *E. B.* t. 1485.

Corn-fields and waste places, everywhere, most abundant. ☉.—The whole summer.—Very variable, from 3 inches to 1—2 feet high. *Leaves* all generally toothed and rough with hairs; *radical* ones more or less pinnatifid. *Flowers* small.

25. LEPIDIUM Linn. Pepper-wort.

Pouch with the *cells* 1-seeded; the *valves* keeled or winged. *Petals* equal. *Cot.* sometimes o=.—Name: λεπίς, a *scale*, from the form of the little pouches.

* *Style* minute.

1. *L. latifolium* L. (broad-leaved *P.*); leaves ovato-lanceolate undivided serrate or entire, pouch oval entire downy with a minute style. *E. B.* t. 182.

Wet sandy shady places, near the sea and salt-marshes; in Norfolk, Essex, and Yorkshire. Weems and Donibristle, in Fifeshire, but apparently only naturalized. 4. 7, 8.—*Stem* 2—3 feet high, branched, erect, with large *leaves*. *Flowers* numerous, small, in many terminal and axillary clustered *racemes*.

2. *L. rudérale* L. (narrow-leaved *P.*); flowers diandrous without petals, radical leaves pinnatifid, those of the branches linear entire, pouch roundish-oval emarginate patent with a minute style. *E. B.* t. 1595.

Waste places near the sea, and among rubbish. ☉ 5, 6.—The

typical form of the plant, with *petals* and six *stamens*, is as yet unknown, unless described as a distinct species. *Stem* sometimes a foot high, much branched. *Seed-vessels* numerous. *Cotyledons* incumbent, as in most of this genus; whereas those of its very near affinity, *L. Virginicum*, are accumbent.

** *Style as long as the pouch.*

3. *L. * Drába* L. (*Whitlow P.*); leaves amplexicaul broadly oblong or lanceolate entire or toothed, pouch cordate entire at the apex crowned with a style about its own length, valves turgid. *E. B. S. t.* 2683.

Fields and hedges, rare. Swansea; at St. Peter's and Ramsgate, Isle of Thanet; banks of the railway at Forest-hill, Surrey; left bank of the Dee below Chester. γ . 5. 6.—*Stem* 8—10 inches to a foot high, branched, with large distant leaves and almost umbellate corymbs of numerous small flowers. *Pedicels* very long.

*** *Style filiform, much shorter than the pouch.*

4. *L. campéstre* Br. (*common Mithridate P.*); pouch ovate emarginate winged rough with minute scales, style scarcely longer than the notch, cauline leaves sagittate toothed. *Thlaspi L.*: *E. B. t.* 1385.

Corn-fields and dry gravelly soil; not uncommon in England and Scotland. \odot or δ . 5—8.—*Stems* solitary, erect, 10—12 inches high, corymbosely branched above. Lower leaves almost spatulate, all slightly pubescent, as well as the racemes and pedicels. Pouch curiously scaly.

5. *L. Smithii* Hook. (*smooth Field P.*); pouch ovate emarginate winged glabrous occasionally with a few minute scales on the back, style twice as long as the notch, cauline leaves sagittate toothed—*Lepidium hirtum* Sm. (partly). *Thlaspi hirtum* Sm. (not *L.*): *E. B. t.* 1803.

Borders of fields and hedges in Norfolk and Suffolk. Caernarvonshire and Anglesea. Frequent, particularly in the west of Scotland. Belfast and Dublin, plentiful. γ . 4—8.—*Stems* many from the same root, 6 inches to more than a foot high, diffuse, irregularly branched. Much resembling the last, but truly distinct. Pouch with a much longer style, quite glabrous, and smooth or even; except that sometimes on the middle of the back there are a few minute scales. When glabrous it is the *L. heterophyllum* of Benthams, from the Pyrenees; our common form is found, however, in the north-west of France.

26. SENEBIÉRA *De Cand.* Wart-Cress.

Fruit broader than long, 2-celled, without valves or wings; cells 1-seeded. *Cotyledons* long, linear, curved.—Named in honour of M. Senebier, an eminent Genevese physiologist.

(We adopt *Senebiera* in place of *Coronopus*, in consequence of its being generally preferred; but the latter appellation given by Gærtner is certainly the oldest; and although it may not happen to be the precise plant of the ancients, many other received names are in the same predicament.)

1. *S. Coronopus* Poir. (common *W.*, *Swine's-cress*); fruit undivided crested with little sharp points, style prominent. *Coronopus Ruellii* Sm.: *E. B.* t. 1660. *S. pinnatifida* DC.

Waste ground, not unfrequent in England. Rare in Scotland. ☉. 6—9. — A much branched spreading weed. *Leaves* bipinnate, their segments linear. *Flowers* very small, white, in lateral axillary corymbs. *Pouch* large in proportion to the flower, curiously crested. *Cotyledons* (in the whole genus) nearly as in *Subularia*.

2. *S. didyma* Pers. (lesser *W.*); fruit emarginate of two wrinkled lobes, style very short. *Coronopus* Sm. *Fl. Brit.* *Lepidium* *E. B.* t. 248.

Waste ground near the sea, in the south and south-west of England; about Exeter, Truro, Penrhyn, and Milfor haven. Shore near Caernarvon. South of Ireland. ☉. 7—9. — *Leaves* once or twice pinnate.

Tribe VIII. ISATIDÆÆ. *Fruit short, 1-celled, 1-seeded, with keeled scarcely dehiscent valves. Cot. o||.* (Gen. 27.)

27. ISATIS Linn. Woad.

Fruit 1-celled, 1-seeded, laterally compressed; *valves* keeled or winged, eventually separating at the apex. *Hypogynous glands* between the longer stamens.—Name: *ισαρις* of the Greeks.

1. *I. * tinctoria* L. (*Dyer's W.*); fruit glabrous obovate-oblong about three times longer than broad, radical leaves oblong crenate, those of the stem sagittate. *E. B.* t. 97.

Cultivated fields, about Ely, Durham, &c. ♂. 7.—*Flowers* yellow. Cultivated for the sake of the blue dye which it yields, hence called *Glastum* by the Romans, from *glas*, the Celtic for *blue*. Woad seems to take that name from *Guadum*, now *Gualdo*, in Italy, where it was formerly extensively cultivated.

SUB-ORDER III. ORTHOPLOCEÆÆ. *Cotyledons conduplicate (o > >).*

Tribe IX. BRASSICÆÆ. *Pod elongated. Dissepiment narrow. Cot. o > >.*

28. BRÁSSICA Linn. Cabbage, Turnip, Navew.

Pod 2-valved (with a sterile, or one-or several-seeded beak).

Seeds in a single row. *Calyx* erect.—Name derived from the Celtic *bresic* (modern Gaelic *praiseach*), a kind of cabbage, or rather pottage, made of it.

* *Valves of pod 1-nerved, veiny; beak usually sterile.*

1. *B. oleracea* L. (*Sea C.*); root caulescent cylindrical fleshy, all the leaves glabrous glaucous waved and lobed, upper ones oblong sessile. *E. B.* t. 637.

Cliffs by the sea: Devonshire, Dover, Wales, Cornwall, Yorkshire, and in the Frith of Forth. ♂. 5—8.—Varying in height, 1—2 feet. *Leaves* thick, subcarinate, the uppermost undivided, but toothed. *Flowers* large, yellow.—The origin of our garden *Cabbage*.

2. *B. * Nápus* L. (*Rape, or Cole-seed*); leaves glabrous somewhat glaucous especially on the under side, lower ones lyrate toothed, upper cordato-lanceolate amplexicaul, pods spreading. *E. B.* t. 2146.

Corn-fields and waste ground, frequent in England. ♂. 5, 6.—1—2 feet high. *Root* slender or fusiform. *Lobes* of the lower leaves crenate, upper leaves entire more glaucous. *Petals* yellow, rather small. *Pods* torulose.—The slender-rooted variety is cultivated for the oil produced by its seeds, which after pressure are formed into cakes, and used as manure and for feeding cattle; but the slender-rooted variety of *B. campestris* is much more employed for the same purpose on the Continent, under the name of *Colsa*.

3. *B. campestris* L. (*common wild N.*); upper stem-leaves cordate acuminate amplexicaul glabrous, lower and radical ones lyrate dentate subhispid glaucous, pods erect. *E. B.* t. 2234.

Corn-fields and sides of rivers and ditches, in many places. ☉ or ♂. 6, 7.—*Root* fusiform, slender and annual in the wild plant, often turnip-shaped and biennial in the cultivated one. *Stem* hispid below. *Flowers* yellow. *Pod* cylindrical or obscurely 4-angular; *seeds* forming slight prominences; beak awl-shaped, striate, sometimes with a single seed.—Apparently the origin of the *Swedish Turnip* of our agriculturists, and in Scotland it has never been found except where the Swedish Turnip had been previously cultivated.

4. *B. * Rápa* L. (*common T.*); root orbicular or oblong fleshy, radical leaves lyrate scabrous not glaucous, lower stem-leaves incised, upper ones cordato-ovate acuminate amplexicaul smooth. *E. B.* t. 2176.

Borders of fields and waste places. ♂. 4—7.—Varying exceedingly in height, according to soil. Upper leaves subglaucous; all more or less toothed. Although this and the last two are readily distinguished in cultivation by their radical leaves alone, there are

strong grounds for considering all to be varieties, as they scarcely differ in other respects.

**** Valves of pod 3-nerved beak 1—3-seeded.**

5. *B. Monénsis* Br. (*Isle-of-Man* or *Wallflower C.*); leaves stalked all deeply pinnatifid, lobes oval oblong unequally toothed, in the upper ones linear.— α . stems prostrate glabrous or hispid at the base. *Sisymbrium L.*: *E. B. t.* 962.— β . stems erect more leafy and hispid. *B. cheiranthus Vill.* *Sinapis Koch*: *E. B. S. t.* 2821.

α . on the isles and shores of the Clyde, and on both sides of the Irish Channel, Argyleshire, Ayrshire, &c.; Isle of Man.— β . S. Wales, Jersey. γ . 5—8.—*Lcares* usually glabrous, except on the petioles. Stems slightly hispid, greedily eaten by sheep and cattle, and probably deserving of being cultivated as fodder.

29. SINÁPIS Linn. Mustard.

Pod 2-valved (with a sterile, or one- or several-seeded beak). *Seeds* in a single row. *Cal.* patent.—Named from the Greek σινάπι, the common mustard, which again Théis derives from the Celtic nap (modern Gaelic neup), a turnip.

*** Valves of pod 1-nerved.**

1. *S. nígra* L. (*common M.*); pods adpressed glabrous tetragonous, beak sterile short subulate, upper leaves linear-lanceolate entire glabrous. *E. B. t.* 969. *Brassica Boiss.*: *Benth.*

Under hedges and in waste places, in England, very rare in Scotland (if wild). ☉ 6—9.—*Stem* 3—4 feet high. Lower leaves large, lyrate, rough. *Pod* with a short empty beak, or rather only the persistent style and stigma at its summit; its valves bluntly but so strongly 1-nerved as to make it quadrangular, the four sides being flat and without any prominent veins.—The seeds yield the mustard of our tables; of which the best is that from which the oil has been expressed, as originally prepared by Mrs. Clements of Durham.

2. *S. incána* L. (*hoary M.*); pods adpressed terete prominently veined with a short 1-seeded beak, leaves lyrate hispid, cauline ones linear-lanceolate, stem much branched. *Erucacrum Koch*: *E. B. S. t.* 2843. *Brassica adpressa Boiss.*: *Benth.*

Jersey and Alderney, but rare. ♂. 7, 8.—*Pods* glabrous or hairy, with a glabrous beak and single seed. *Seeds* ovate, compressed; on which account it has been removed to the genus *Erucacrum*, but it is less allied to *Brass. Erucacrum*, the type of that genus, than to *Sin. nígra*.

**** Valves of pod 3—5-nerved.**

3. *S. arvensis* L. (*wild M., Charlock*); pods glabrous with many angles turgid and knotty longer than the slightly com-

pressed beak, stem and leaves bristly. *E. B.* t. 1748. *Brassica Sinapistrum Boiss.: Benth.*

Corn-fields, too frequent. ☉. 5—8.—*Stem* 1—2 ft. high, rough. *Flowers* rather large, yellow. *Calyx* very spreading. *Beak* of the pod usually empty, sometimes with one seed.

4. *S. álba* L. (*white M.*); pods hispid turgid shorter and slightly narrower than the flat ensiform beak, leaves pinnatifid. *E. B.* t. 1677. *Brassica Boiss.: Benth.*

Waste places, frequent in England; more rare in Scotland. ☉. 6, 7.—*Stem* 1—1½ ft. high, sparingly hairy or glabrous. *Leaves* usually glabrous, the lobes variously cut and toothed, or erose. *Flowers* large, yellow. Well distinguished from the other British species by its long, thin beak, which contains a single seed.

30. DIPLOTÁXIS *De Cand.* Rocket.

Pod linear, compressed (with usually an empty beak), 2-valved; the *valves* slightly convex, 1-nerved. *Seeds* (oval, or oblong) in two rows. *Calyx* patent.—Named from διπλος, *double*, and ραξις, *a series*, in allusion to the two rows of seeds.

1. *D. tenuifólia* DC. (*Wall R.*); pods shortly beaked erect, pedicels spreading, stems erect leafy glabrous somewhat woody at the base, leaves lanceolate very acute pinnatifid or bipinnatifid glabrous. *Sisymbrium L.: E. B.* t. 525. *Sinapis Br. Brassica Boiss.: Benth.*

Old walls and heaps of rubbish about great towns, in the south, south-west, and east of England: as London, Bristol, Yarmouth, Chester, Tynemouth, and Shields. St. David's, Fifeshire, but introduced with ballast. 4. 6—9.—*Root* thick. *Stem* 1—1½ ft. high, glabrous, almost woody at the base. *Flowers* large, yellow. This plant smells disagreeably.

2. *D. murális* DC. (*Sand R.*); pods shortly beaked erect, pedicels spreading, stem herbaceous hispid spreading leafy only at the base, leaves sinuate glabrous. *Sisymbrium L.: E. B.* t. 1090. *Sinapis Br. Brassica Boiss.: Benth.*

Sandy barren fields near the sea, in the south and south-west of England; Isle of Thanet, and below Bristol; also at Tynemouth and Shields. Edinburgh and Dunfermline, but not truly wild. ☉. 8, 9.—Very like the preceding, but annual, and much smaller and less leafy.

Tribe X. VELLÆ. *Pouch with the valves convex; dissepiment broad. Cot. o > >.* (Gen. 31.)

31. VÉLLA *Linn.* Cress-rocket.

Pouch swollen, 2-celled, with a dilated, flat, winged *style*, twice as long as the *valves*. *Seeds* 4 in each cell. *Cal.* erect.

—Named from *veler*, in Celtic (in modern Gaelic *biolar*), the *cress*.

1. *V. *ánua* L. (*annual C.*); leaves bipinnatifid, fruit pendulous. *E. B.* t. 1442. *Carrichtera Vellæ DC.*

Sandy fields. Salisbury Plain: *Lawson*. ☉. 6.—Not found since the time of Ray.

Tribe XI. RAPHANÆÆ. *Fruit with the pod or lower part abortive and stalk-like, consisting of a beak without valves, divided transversely into 1-seeded cells sometimes separating. Cot. o>> (Gen. 32, 33.)*

32. CRÁMBE *Linn.* Kale.

Fruit without valves, the upper joint globose, deciduous, bearing one pendulous seed upon a stalk arising from the bottom of the cell; lower joint resembling a pedicel.—Name: *κραμβή* of the Greeks.

1. *C. marítima* L. (*Sea K.*); longer filaments forked, fruit pointless, leaves roundish sinuated waved toothed glaucous, and as well as the stem glabrous. *E. B.* t. 924.

Sea-coast in sandy or stony soils in various places, but not very general. 4. 6.—Root thick, fleshy. *Flowers white.* Well known as an excellent culinary vegetable when cultivated and blanched.

33. RAPHANUS *Linn.* Radish.

Fruit without valves, or a dissepiment, with a long style, several-seeded. Cal. erect.—Name: *ρα*, *quickly*, and *φαίνομαι* to *appear*; from its rapid vegetation.

1. *R. Raphanistrum* L. (*wild R., or jointed Charlock*); leaves simply lyrate, fruit jointed, style 2—3 times longer than the last joint. *E. B.* t. 856.

Corn-fields, frequent. ☉. Summer and autumn.—*Stem 1—1½ foot high. Leaves stalked, rough. Flowers yellow, rarely reddish, veined.*

2. *R. marítimus* Sm. (*Sea R.*); leaves interruptedly lyrate, fruit jointed striate, style scarcely longer than the last joint. *E. B.* t. 1643.

Beachy-head, Sussex. Jersey and Guernsey. Sea-shore in Bute, Argyleshire, and Galloway; Scotland. ♂. 8.—*Stem 3—4 feet high. All the leaves rough and the lobes toothed. Flowers rather large, yellow. "Pods larger than in the preceding, and (especially when dry) channelled with fewer, broader, and deeper furrows, and sharp intermediate prominences; the beak also is smoother, as is the upper part of the plant generally."* *J. E. Bowman.* Is it really a distinct species? *R. Landra DC.* only differs by the longer style, and is in-

intermediate. The character derived from the leaves sometimes disappears.

ORD. VII. RESEDACEÆ *De Cand.*

Calyx of several narrow sepals. *Petals* unequal, mostly laciniate. *Stamens* 10—24, inserted upon a glandular irregular disk. *Ovary* sessile, 3—4-lobed, 1-celled, with 3—4 parietal placentas bearing many seeds (or of 4—6 verticillate 1-celled carpels). *Stigmas* sessile, one to each placenta and alternate with it. Fruit opening in an early stage at the extremity along the line of placentas. — *Reseda odorata* is the sweet Mignonette of our gardens.

1. *RESÉDA* *Linn.* Dyer's Rocket. Mignonette.

Cal. of 1 piece, many-parted. *Pet.* more or less divided and unequal. *Caps.* of 1 cell, opening at the top. *Stigmas* 3—4. —Name from *resedo*, to calm, from its supposed sedative qualities.

1. *R. Lutéola* L. (common *D.*, Yellow-weed or Weld); leaves long lanceolate undivided, calyx 4-partite, stigmas 3. *E. B.* t. 320.

Waste places; frequent on a chalky soil. ☉. 6—8.—*Stem* 2—3 feet high, branched. *Racemes* long, of numerous yellowish flowers, with prominent *stamens*. *Disk* large, green, erenate, on the upper side of the flower; 3 of the *petals* 3-cleft, segments linear; two lower *petals* entire; *capsules* broad, depressed.—Used in dyeing woollen stuffs yellow.

2. *R. lutea* L. (base *D.*, wild *M.*); leaves 3-cleft or pinnatifid, calyx 6-partite, petals 6 very unequal, stigmas 3. *E. B.* t. 321.

Waste places and chalky hills. ☉ or in mild winters 2. 6—8.—*Leaves* very variable, some bipinnatifid, lower ones often pinnate. *Flowers* deeper yellow than in the last. Two upper *petals* with 2 wing-like lobes, lateral ones unequally bifid, lower ones entire. *Capsule* oblong, wrinkled.

3. *R. *fruticulosa* L. (shrubby base *D.*); leaves all pinnate waved glaucous, calyx 5-partite, petals 5 nearly equal trifid, stigmas 4. *E. B. S.* t. 2628. *R. suffruticulosa* L.: *Bab.*

Cornwall. Weston-super-mare, Somersetshire. Unenclosed sand-hills, Bootle, 4—5 miles from Liverpool. Coventry, Warwickshire. The following stations, either for this or *R. alba*, have also been communicated:—about Dublin; between Cork and Glanmire; and near Gosport. ♂ or 2. 6.—*R. alba* of Continental writers chiefly differs from this by having the *calyx* 6-partite, and 6 *petals*; Mr. Borrer, however, can only distinguish the *R. alba* of the Linnean Herbarium by its shorter flower-stalks, more cylindrical *racemes*, and the

terminal lobe of its *leaves* more similar to the rest (less dilated than that of *R. fruticosum*):—a specimen from Mr. Borrer has the *calyx* 5-partite.

ORD. VIII. CISTACEÆ Juss.

Sepals 3, with a twisted æstivation, with usually 2 outer smaller ones. *Petals* 5, deciduous, with a twisted and erumped æstivation. *Stamens* numerous. *Ovary* 1, 1- or many-celled. *Style* 1. *Stigma* capitate, simple. *Capsule* of 3—5, rarely 10 valves. *Seeds* numerous. *Embryo* spiral or eurved, in a mealy *albumen*.—Shrubs or herbaceous plants abounding in Southern Europe and Northern Africa, with handsome, generally fugacious, flowers.—*Cistus Creticus* affords the balsam called *Gum Ladanum*. The stamens of *Helianthemum* expand after being suddenly compressed between the finger and thumb.

1. HELIANTHEMUM Tourn. Rock-rose.

Sep. 5, of which 3 are equal and 2 outer ones smaller. *Caps.* 3-valved.—Named from ἡλιος, the sun, and ανθος, a flower; the same as *Helianthus*.

1. *H. cœnum* Dun. (*hoary dwarf R.*); shrubby, leaves without stipules opposite ovate or oblong petiolate flat hoary beneath, racemes terminal bracteate, style twisted at the base reflexed, at the apex inflexed, seeds blackish. *Cistus L. C. marifolius, E. B. t.* 396.

Rare; alpine rocks in the north of England, Lancashire, Westmoreland, on Cronkley Fell in Yorkshire, and in Wales. Western Isles of Arran, Ireland. 4. 5, 7.—A low shrubby plant, with hoary leaves, and rather small yellow flowers. *Cistus marifolius, Anglicus, Etandicus*, and *Italicus* of Linnæus appear all to be mere *vars*.

2. *H. guttatum* Miller (*spotted annual R.*); annual erect, leaves oblongo-lanceolate or linear, the lower opposite without stipules, the upper alternate, style straight very short.—*a.* racemes without bracteas. *Cistus L.: E. B. t.* 544.—*β.* racemes bracteate. *H. Breweri Planch. in Lond. Journ. Bot. iii. p.* 618. *t.* 21.

Very rare.—*α.* Three-Castle Head, Cork. Jersey.—*β.* Holyhead mountain, and near Amlwch, Anglesea. ☉. 6—8.

3. *H. *ledifolium* Willd. (*Ledum-leaved R.*); herbaceous slightly downy, leaves with stipules lanceolate, flower-stalks solitary opposite to the leaves shorter than the calyx erect in fruit, styles straight, capsule polished. *Cistus L.: E. B. t.* 2414.

Very rare; on Brean downs, Somersetshire; *Huds.* ☉. 6, 7.—We have never seen British specimens of this plant, and it is generally supposed that Hudson mistook *H. potifolium* for it.

4. *H. vulgäre* Gärt. (*common R.*); shrubby procumbent, leaves with stipules opposite ovate or oblong nearly flat green above, racemes solitary terminal bracteate, pedicels elongated deflexed in fruit, style bent at the base somewhat clavate at the apex, seeds black. *Cistus Helianthemum* L.: *E. B.* t. 1321. *C. tomentosus*, *E. B.* t. 2208. *C. Surrejanus* L., (petals lanceolate often eut): *E. B.* t. 2207.

Frequent in dry pastures, especcially in a ehalky or gravelly soil, 4. 7—9.

5. *H. polifólium* Pers. (*white R.*); shrubby procumbent hoary, leaves with stipules opposite ovato-oblong or oblong-linear more or less revolute at the edge, racemes solitary terminal bracteate, pedicels elongated and deflexed in fruit, style bent at the base somewhat elavate at the apex, seeds black. *H. Apenninum* DC. *Cistus* L.: *E. B.* t. 1322.

Rare; in the south of England. Brean downs, Somersetshire; Torquay and Babbicombe, Devonshire. 2 7, 8. — *Flowers* white. In gardens all intermediate states may be observed between this and the last, of whieh, with about 50 other supposed species, it is probably a mere variety.

ORD. IX. VIOLACEÆ *De Cand.*

Sepals 5, persistent. *Petals* 5, unequal and the lower one spurred at the base, or sometimes equal. *Stamens* 5. *Anthers* generally with a dilated appendage at their extremity; 2 of them (in the genera with irregular flowers) usually appendieu-late at the base. *Ovary* 1-celled, with 3 parietal placentas, bearing several seeds. *Style* 1. *Capsule* 1-celled, 3-valved, bearing the seeds along the middle of each valve. *Embryo* straight, about as long as the copious fleshy *albumen*.—Herbs or shrubs, with stipuled leaves, and powerful emetic and purgative roots; as *Viola Ipecacuanha*, *Ionidium parviflorum* (which has been satisfactorily ascertained to be the famous “Cuyehunchulli” or *Ionidium Marcucii* of Dr. Baneroft), &c.

VIOLA Linn. Violet.

Cal. of 5 sepals extended at the base. *Pet.* 5, unequal, the under one spurred at the base. *Anthers* connate, 2 of them spurred behind.—Name of Celtic origin; in modern Gaelic *fail* signifies a smell, *fail-chuach* a violet.

* *Stem* scarcely any, or creeping.

† *Stigma* flat above, *peduncles* of fruit erect.

1. *V. palústris* L. (*Marsh V.*); ereeping underground, glabrous, leaves cordate or reniform veiny beneath, sepals obtuse,

spur very short, lateral petals scarcely hairy, anther-spurs short and rounded, capsule glabrous. *E. B. t.* 444.

Bogs and marshy grounds, less frequent in the south; abundant in Scotland, and even at a very considerable elevation. *¶. 4—7.*—*Flowers* very pale blue with purple streaks. The *petals* are slightly hairy on one side at the base, but the lateral ones have not a distinct line of hairs. *Anthers* with the cells nearly parallel, not slightly diverging below as in the two following species.

†† *Stigma uncinatè deflexed, convex above peduncles of fruit prostrate.*

2. *V. hirta* L. (*hairy V.*); runners none, leaves cordate and as well as the petioles and capsules rough with hairs, sepals obtuse, lateral petals usually with a hairy central line, spur hooked at the end, anther-spurs linear-oblong. *E. B. t.* 894.

Woods and pastures in England, principally in a chalky or limestone soil. Rare in Scotland, and only in Dumfriesshire and on the eastern side. *¶. 4, 5.*—*Stems* usually several, short, decumbent at the base, but not at all sarmentose. *Flowers* pale, rather dingy blue, scentless. Nearly allied to *V. odorata*, and chiefly distinguished by the want of runners, by the greater hairiness of the plant, the hairs on the petioles always spreading, and the spur of the corolla compressed and hooked, not channelled, and straight. *Bracteoles* usually inserted below the middle of the peduncle, sometimes above the middle. The *flowers* of this, and several of the other species, are often destitute of *petals*.

3. *V. odorata* L. (*sweet V.*); stems with runners, leaves cordate and as well as the petioles and capsules pubescent or nearly glabrous, sepals obtuse, lateral petals usually with a hairy line, spur straight, anther-spurs lanceolate obtuse decurved. *E. B. t.* 619.

Woods, banks, and pastures; frequent in England. Very rare in Scotland, and perhaps only naturalized; as woods near Slateford and Collington, Edinburgh; Partick, Glasgow; and near the Castle Rock, Stirling. Hedges between Killiney Hill and Bray, Ireland. *¶. 3, 4.*—*Stems* truly sarmentose as in the strawberry. *Leaves* and *flowers* from the crown of the root. *Flowers* deep purple, sometimes reddish-purple or lilac, often white, fragrant. Hairs on the petioles short and deflexed, rarely long and spreading as in *V. hirta*. *Bracteoles* usually inserted above the middle of the peduncle, sometimes about the middle or even below it. The white-flowered variety oftener than the purple one wants the hairs on the lateral petals, when it is the *V. imberbis* Leight., and sometimes, as well as the lilac variety, has the sepals ciliated.

** *Furnished with an evident stem, peduncles of fruit erect.*

4. *V. canina* L. (*Gerard's or Dog V.*); primary stem short and bearing leaves only, lateral ones or flowering branches

numerous ascending simple, leaves broadly cordate more or less acute, stipules ciliato-dentate, sepals acuminate. *E. B. t. 620.* *V. sylvatica Fries.* *V. flavicornis Forster in E. B. S. t. 2736.*

Woods, banks, and dry pastures, frequent, also in clefts of rocks at a considerable elevation. γ . 4—8. — Variable in regard to size. In mountainous situations the blossoms are often numerous, and large in proportion to the size of the plant. *Flowers* scentless, blue, purple, or sometimes almost white. *Bracteoles* subulate and entire in this and the following species. The whole plant is usually glabrous, but sometimes the flowering stems have a minute deflexed pubescence. In this and the next the fruit is sometimes produced on flowers, from which the corolla had been absent.

5. *V. púmila* Vill. (*Dillenius' V.*); primary and lateral stems elongated flower-bearing, leaves ovate or oblong or lanceolate usually cordate at the base, stipules more or less toothed or serrate, sepals acuminate, "anther-spurs three times as long as broad." *V. canina Fries, Bab.*— α . leaves cordate at the base, stipules ciliate or toothed. *V. flavicornis Sm.*— β . leaves ovato-lanceolate rounded at the base, stipules inciso-serrate. *V. lactea Sm. E. B. t. 445.* *V. lancifolia Thore.*

Heathy, dry, or sandy places, perhaps not uncommon.— β . Tunbridge Wells, Buckland, Devonshire. γ . 4—8.—According to Mr. Babington, *V. pumila* of Villars has a "rhizomatous" root, and the present one has not; but it accords perfectly with what we possess from De Gingins, and which he had compared with Villars' specimens while describing the Violacæ for De Candolle's *Prodromus*. Whatever appellation, however, be ultimately applied to it, it cannot receive that of *canina*, as proposed by Fries and his followers, since it is not the *dog-violet* of England; a name which Linnæus took from Gerard, and merely converted into Latin; in such a case we must look to the origin of the name, not to what Linnæus may have supposed to be so. Generally smaller than the last species, and quite glabrous or most minutely pubescent. *Flowers* paler, sometimes white. Mr. Bentham, however, unites both this and the next to *V. canina*.

6. *V. stagnína* Kit. (*Haller's V.*); primary and lateral stems flower-bearing and elongated, leaves ovato-lanceolate subcordate at the base, petioles winged towards the top, stipules inciso-serrate, sepals acuminate, anther-spurs $1\frac{1}{2}$ —2 times longer than broad, spur of corolla very short, "rhizome slender." *V. stricta Horn.: Bab. in Ann. N. H. Jan. 1852, p. 13.* *V. lactea Brit. Fl. ed. 6.*

Bogs and fens, rare. Bottisham Fen, Cambridgeshire, Lincolnshire, Sussex, Cornwall; also in Ireland. γ . 5, 6. — This is unquestionably the only species we had in view as *V. lactea* in the sixth edition; it is almost the only one which we have received as such from British collectors; and it is, we conceive, that intended by *V.*

lactea by Swiss botanists, and united to *V. montana* by Gingins. If we understand correctly what is meant by "rhizome slender," there ought to be a subterranean creeping stem as in *V. palustris*, but our specimens scarcely show a greater difference in that respect between this and the last species, than may be caused by the soil: the length of the *anther-spurs* is dependent on that of the spur of the corolla. A small plant in the wild state, sometimes a foot high when cultivated, having usually several flowering simple branches from near the root; these seem scarcely so persistent as in the last species, from which it may not be really distinct. *Leaves* almost lanceolate and narrower, usually attenuated at the base, but sometimes cordate. *Stipules* usually much shorter than the *petiole*. *Stigma* very slightly curved, almost clavate and quite smooth, without any horizontal beak, the orifice oblique and very large. *Flowers* pale blue or almost white.

†† *Stigma large, capitate, style clavate.*

7. *V. tricolor* L. (*Pansy V.* or *Heart's Ease*); root annual or fusiform, stem angled branched, leaves oblong deeply crenate, stipules lyrate-pinnatifid, terminal lobe crenate, spur of the corolla about as long as the produced base of the calyx, "anther-cells diverging at the base."—*α*. petals longer than the calyx. *E. B.* t. 1287. *V. Curtisii* Forst. in *E. B. S.* t. 2693.—*β*. petals shorter than the calyx. *V. arvensis* Murr.: *E. B. S.* t. 2712.

Banks and cultivated fields, frequent. *β*. Corn-fields. ☉, ♂, or ♀ (perhaps only when cultivated). *Fl.* the whole summer.—Extremely variable, especially in the size and colour of its *flowers*, yellow in *V. Curtisii* of Forster, which we certainly consider belongs to this and not to *V. lutea*. *Stigma*, in this and the following species, large, capitate, obliquely perforated.

8. *V. lutea* Huds. (*yellow Mountain V.*, or *yellow Pansy*); perennial diffuse and filiform below-ground, stem branched and very slender at the base, leaves oblong-ovate or ovate crenate, stipules subpalmato-pinnatifid, terminal lobe entire, spur of the corolla about as long as the produced base of the calyx, "anther-cells nearly parallel."—*α*. petals all yellow or the two upper purple. *E. B.* t. 721.—*β*. petals all purple. *V. amœna* Sym.

Mountainous pastures. Frequent in Wales, the north of England, and Scotland; *α* and *β* often growing together. ♀. 5—9.—Under-ground *stems* or *branches* resembling long thread-like roots; true stems also slender, but particularly so at the base; both very different from what we have always seen in *V. tricolor*, and by which this species is in some cases only to be distinguished. The *flowers* are generally of a pale yellow or sulphur colour, much larger than is usual in wild states of *V. tricolor*.

ORD. X. DROSERACEÆ *De Cand.*

Sepals usually 5, persistent, equal. *Petals* as many as the sepals. *Stamens* free, equal in number with the petals or 2—4 times as many; *anthers* dehiscing longitudinally. *Ovary* 1. *Styles* or sessile *stigmas* several. *Capsule* 1-celled, with 3—5 placentas and 3—5 valves, loculicidal; *valves* bearing the seeds along their middle. *Seeds* never comose.—Herbs of marshy ground, with the leaves all radical or stem-leaves alternate.

1. DROSERA. Styles filiform. Leaves clothed with glandular hairs.
2. PARNASSIA. Stigmas sessile. Leaves glabrous.

SUB-ORD. I. DROSEREÆ. *Styles (or style) elongated. Stamens hypogynous, as many as the petals. Capsule 1(—3)-celled, 3—5-valved. Seed with a minute embryo at the base of a copious fleshy albumen. Leaves clothed with beautiful glandular hairs, and having a circinate veneration.*

1. DRÓSERA *Linn.* Sun-dew.

Styles 3—5, variously divided, usually bipartite and resembling 6—10 distinct styles. *Capsule* 1-celled, many-seeded.—Name derived from *ῥοσος*, *dew*, the glands exuding a pellucid fluid, which makes this plant appear as if covered with dew. In the Latin of the middle ages (for it was unnoticed by the ancients) it is called *Ros solis*, a mere translation of the common name. Nearly all the species stain the paper in which they are placed, of a purple colour.

1. *D. rotundifolia* L. (*round-leaved S.*); leaves radical ovato-orbicular spreading, petioles hairy, seeds chaffy. *E. B. t.* 867.

Bogs and moist heathy ground, frequent. 4. 7, 8.—In all our species the leaves are covered with red stalked viscid glands, which retain insects; the flowers are racemed, small, secund, on a scape, and the styles (3—4) are bipartite. *Stigmas* entire, clavate. *Petals* almost always 6.

2. *D. longifolia* L. (*spathulate-leaved S.*); leaves radical oblong-spathulate obtuse or obovate on long glabrous erect petioles. seeds with a compact rough coat not chaffy. *E. B. t.* 868.

Bogs and moist heathy ground, not uncommon; more frequent in the south than in the north. Isle of Skye. South of Ireland. 4. 7, 8.—Well distinguished from the following, by its rough, and not loose, coat adhering firmly to the rest of the seed, a character long ago observed and figured by Dreves and Hayne. *Petals, sepals, and stamens* often 6 and sometimes 8 in this and the next species. Limb of

the *leaf* scarcely longer than 3—4 times its breadth, sometimes not twice longer, gradually tapering into the glabrous *petiole*. *Stigmas* bifid.

3. *D. A'nglica* Huds. (*great English S.*); leaves radical linear-spathulate obtuse on long glabrous erect petioles, seeds with a loose chaffy coat. *E. B.* t. 869.

Bogs in several parts of Scotland and Ireland. Near Warrington, Lancashire; Bedfordshire, Norfolk, Hampshire, Devon, and probably in several other counties. 4. 7, 8.—This has much longer and narrower *leaves* than the last, and would better deserve the name of *longifolia*: the limb is at least 5—6 times and often 10—12 times longer than broad, and is so attenuated into the petiole that the commencement of the latter is chiefly distinguished by being glabrous. *Scape* much taller than the last.

SUB-ORD. II. PARNASSIÆ. *Stigmas* 4, sessile, in a line with the *placentas*. *Stamens* 5, perigynous. *Capsule* 1-celled, 4-valved. *Seeds* without albumen. *Leaves* glabrous.¹

2. PARNÁSSIA Linn. Grass of Parnassus.

Stamens with as many intermediate nectaries fringed with globular-headed filaments.—Named from *Mount Parnassus*, to which place, indeed, the plant is by no means peculiar; it is called by Dioscorides *αγρωστis εν τῷ Παρνασσῷ*.

1. *P. palústris* L. (*common G.*); bristles of the nectary 9—13 leaves cordate cauline one amplexicaul. *E. B.* t. 82.

Bogs and wet places; frequent in the North. 4. 8—10.—*Leaves* mostly radical, on long footstalks, cordate, entire, nerved; one on the stem (a *bractea*?) below the middle, sessile. *Stem* angular, from 1 inch to usually 8—10 inches high. *Flower* solitary, terminal, large, yellowish-white, handsome. *Petals* broadly obovate. *Nectaries*, each an obcordate scale, opposite the petals, fringed along the margin with white hairs which are terminated by a yellow pellucid globular gland.

ORD. XI. POLYGALACEÆ Juss.

Sepals 5, the 2 inner generally large and petaloid. *Petals* 3—5, more or less united with the filaments of the *stamens*, which form 2 parcels, each with 4 *anthers*, opening by pores at the apex. *Ovary* 1, usually 2-celled. *Style* and *stigma* 1. *Fruit* a capsule, or drupaceous, 2- or 1-celled; dehiscence loculicidal. *Seeds* solitary, pendulous, often with an arillodium at the

¹ This sub-order agrees in the perigynous stamens and general appearance with several species of *Saxifraga*, especially some from the mountains of East India; but most botanists agree that it has a close affinity with the true *Droseraceæ*, and we are not prepared to place these also in *Saxifragaceæ*. In the meantime we leave them together, as in former editions, among the *Thalamidoræ*.

base.—Shrubs or herbs. Leaves without stipules. Flowers usually racemose.—Several of this family are used medicinally. The leaves are bitter, the roots more or less milky. *Polygala Senega* is the snake-root of N. America. *Kraueria* of Peru is powerfully astringent, and usually referred here.

1. *POLYGALA* Linn. Milkwort.

Cal. with 2 sepals, wing-shaped, and coloured. *Pet.* combined by their claws with the filaments, the lower one keeled. *Caps.* compressed. *Seeds* downy, crested at the hilum.—Name, πολυ, much, and γαλα, milk, from some fancied property in the plant.

1. *P. vulgaris* L. (common *M.*); perennial, keel crested, flowers in a terminal raceme, wings of the calyx ovate or oblong, their nerves branched the lateral ones anastomosing with a branch of the central nerve, capsule glabrous sessile obcordate, seed with the lobes of the arillodium unequal, stems herbaceous often branched at the base, branches simple procumbent or ascending, leaves on the branches linear or oblong.—*α.* leaves scattered, lower ones smaller oblong, wings of the calyx obovate mucronate. *E. B.* t. 76. *P. oxyptera* Reich.: *E. B. S.* t. 2827. *P. depressa* Wendl.—*β.* lower leaves chiefly in an irregular tuft obovate obtuse, wings of the calyx oblong. *P. calcarea* Schultz. *P. amara* Don in *E. B. S.* t. 2764.

Dry hilly pastures, frequent. *ϑ.* 5—9.—*Stems* often very short, with crowded alternate or opposite, obovate or oblong, obtuse leaves, branched or simple: *branches* 4—8 inches long, being a mere continuation of the stem when this is simple, often springing from the root. *Cor.* beautifully crested, blue, purple, pink, or white. *Sepals* persistent, the two larger ones enclosing the fruit and usually twice as long, 3-nerved, the veins arising from the two lateral nerves either anastomising with each other or with the upper vein of the central nerve.

2. *P. austriaca* Crantz (*Austrian M.*); perennial, keel crested, flowers in a terminal raceme, “wings of the calyx oblong or obovate obtuse, their nerves simple or slightly branched free, capsule wedge-shaped below roundish broader than the wings, seed with the lobes of the arillodium nearly equal,” stems herbaceous, “leaves in a rosette obovate obtuse.”—*α.* leaves of the rosette larger than those of the branching flower-shoot, flowers smaller, capsule rounded below,—*β.* leaves of the rosette larger than those of the nearly constantly simple flower-shoot, flowers larger, capsule wedge-shaped. *P. uliginosa* Reich. *P. myrtifolia* Fries.

β. Back of Cronkley Fell, Yorkshire; Messrs. Backhouse. *ϑ.* 6, 7.—The few specimens we have seen of the var. *β.* (the only one yet discovered in Britain) do not enable us to form a satisfactory character:

we therefore avail ourselves of those given by Mr. Babington, in the Ann. N. H. April 1853, p. 270. The var. *a.* is what we alluded to in the sixth edition as *P. amara* of most continental botanists.

ORD. XII. FRANKENIACEÆ *St. Hil.*

Sepals 4—5, combined into a furrowed persistent tube. *Petals* 4—5, clawed, crowned at the mouth. *Stamens* as many as the petals and alternating with them, with usually 1—2 accessory ones opposite to the petals. *Ovary* 1. *Style* filiform, 2—3-cleft. *Capsule* 2—4-valved, 1-celled. *Seeds* minute, attached to the margins of the valves. *Embryo* straight, within the *albumen*.—Herbaceous or suffruticose, much branched. Leaves opposite, without stipules, but with a membranous sheathing base.

1. FRANKÉNIA *Linn.* Sea-Heath.

Stig. 3.—Named from *John Franken*, a Swedish botanist and professor of medicine at Upsal, who died in 1661.

1. *F. lævis* *L.* (*smooth S.*); leaves linear revolute at the margin glabrous ciliated at the base. *E. B. t.* 205.

Muddy salt marshes about Yarmouth and the other eastern coasts of England. Isle of Sheppey, Kent. *4.* 7, 8.—A humble procumbent plant, with wiry stems and numerous fascicled leaves, which are really oblong, and only appear linear by the edges being revolute. *Flowers* pale rose-coloured, terminal or from the axils of the branches.

2. *F. *pulverulenta* *L.* (*powdery S.*); leaves obovate retuse glabrous above, downy and pulverulent beneath, petiole ciliated. *E. B. t.* 2222.

Found in the time of Dillenius and Hudson on the sea-coast of Sussex. *5.* 7.—Stems prostrate, repeatedly dichotomous. *Flowers* smaller than in the preceding.

ORD. XIII. ELATINACEÆ *Camb.*

Calyx 3—5-partite or -cleft. *Petals* 3—5, sessile. *Stamens* equal to, or double the number of, petals. *Ovary* with from 3—5 cells and as many styles and capitate stigmas. *Capsule* 3—5-celled, 3—5-valved; valves alternate with the dissepiments which adhere to a central axis. *Seeds* numerous, without albumen; radicle turned to the hilum.—Small annuals, inhabiting marshy places, with rooting stems and opposite or verticillate leaves.

1. ELATÍNE *Linn.* Water-wort.

Cal. inferior, 3—4-partite or -cleft, persistent, *Pet.* 3—4. *Styles* 3 or 4, very short. *Caps.* 3—4-valved 3—4-celled.

Seeds cylindrical, furrowed and transversely striate.—Named from *ελατινη*, some plant found growing among corn and very dissimilar to our present one.

1. *E. hexándra* DC. (*hexandrous* W.); leaves opposite spatulate, flowers alternate pedicellate erect hexandrous tripetalous, calyx-segments spreading, capsule turbinate concave at the summit 3-celled, seeds 8—12 in each cell nearly straight ascending. *E. tripetala* Sm. *E. Fl.* *E. Hydropiper* *E. B.* t. 955. (not L.)

Margins of ponds and ditches, rare. Bomere pool, near Condoover, Shropshire; Hedge-Court Pond, near East Grinstead, Surrey; Binfield, Berks; Crawley and Maresfield, Sussex; Coleshill pool, Warwickshire; also in Cornwall, Leicestershire, Cheshire, and Anglesea. Loch Ruisky, near Callender, and Loch of Cluny, Perthshire; Loch of Drum, Kincardineshire; Loch Fadd, Isle of Bute. ☉. 7—9.—A minute, procumbent, much-branching plant, with axillary solitary flowers. *Petals* rose-coloured. *Seeds* mostly beautifully ribbed and transversely striate.

2. *E. Hydropíper* L. (*small octandrous* W.); leaves opposite spathulate, flowers alternate sessile erect octandrous tetrapetalous, calyx shorter than the petals divided to the base, segments ligulate, capsule roundish depressed 4-celled, seeds about 4 in each cell pendulous uncinat. *Linn. Flor. Succ.; Borr.* in *E. B. S.* t. 2670 (excl. a.). *E. nodosa* Arn.

Rare; Farnham, Surrey. East end of Lyn Coron, Anglesea, growing with *E. hexandra*. Newry, and at the Lough Neagh outlet of the Lagan Canal, Ireland. ☉. 8.—Asserted by Seubert to be the *Hydropiper* of Buxbaum, and consequently of Linnæus, but certainly most distinct from *E. Hydropiper* DC., the *E. major* of Braun, which is that figured in Vaillant's *Fl. Par.* t. 2. f. 2., and Lam. III. t. 320. f. 2. This last is much stouter, has the seeds almost straight and as numerous as in *E. hexandra*, capsule depressed, twice as large as in our two species and the calyx cleft only to about the middle of the segments which are short very broadly ovate and erect; the flowers are evidently pedicellate: it is allied to, and united, we think erroneously, by Seubert, with *E. hexandra*. We have never seen specimens except from the neighbourhood of Paris.

ORD. XIV. CARYOPHYLLACEÆ Juss.

Sepals 5 or 4, persistent, distinct or united. *Petals* as many, rarely wanting. *Stamens* as many as, or double the number of, the petals, inserted upon a fleshy elevated disk, supporting the ovary, or a ring. *Anthers* opening longitudinally. *Ovary* 1. *Styles* 2—5. *Capsule* 1-celled (sometimes only so at the summit and 2—5-celled below), 2—5 valved or opening at the summit with teeth, placenta central and free in the 1-celled capsules, in

the rest axile. *Seeds* generally numerous. * *Embryo* generally curved round a mealy *albumen*.—Herbs, more or less tumid at the joints, with opposite entire leaves, without stipules (by which alone our Sub-order Alsineæ differs from Paronychiaceæ).

Sub-Ord. I. SILENEÆ. *Calyx* monophyllous, toothed. *Capsule* stalked. *Stamens* 10.

1. DIANTHUS. *Calyx* with bracts (usually 4) at the base. *Seeds* peltate. *Styles* 2.
2. SAPONARIA. *Calyx* naked at the base, terete. *Seeds* globose or reniform. *Styles* 2.
- 2^a. VACCARIA. *Calyx* naked at the base, 5-angled and in fruit 5-winged. *Styles* 2.
- 2^b. CUCUBALUS. *Capsule* fleshy, scarcely opening. *Styles* 3—4.
3. SILENE. *Capsule* dry, opening at the top with 6 teeth. *Styles* 3—5.
4. LYCHNIS. *Styles* 5. *Petals* with an appendage at the base of the limb.
5. AGROSTEMMA. *Styles* 5. *Petals* without an appendage.

Sub-Ord. II. ALSINEÆ. *Sepals* distinct. *Capsule* sessile, 1-celled. *Petals* often perigynous.

* *Capsule* opening by as many entire valves as styles.

† *Styles* as many as the *sepals*, and alternate with the valves of the capsule, opposite the *sepals*.

6. SAGINA. *Petals* 0, or minute, or entire. *Stamens* usually 4 or 10. *Styles* 4—5.

†† *Styles* and capsule-valves fewer than the *sepals*; or if as many, styles opposite to, and caps.-valves alternate with, the *sepals*.

7. BUFFONIA. *Sepals* 4. *Petals* 4, entire. *Stamens* 4. *Styles* 2.
8. CHERLERIA. *Sepals* 5. *Petals* 0 (or very minute and perigynous). *Stamens* 10. *Styles* 3. *Seeds* few, minute. *Flowers* polygamous.
9. HONCKENYA. *Sepals* 5. *Petals* entire, conspicuous. *Stamens* 10. *Styles* 3—5. *Seeds* few, large. *Flowers* polygamous.
10. ARENARIA. § 1. *Sepals* usually 5. *Petals* entire, conspicuous. *Stamens* usually 10. *Styles* usually 3. *Seeds* many, minute. *Flowers* all perfect.

** *Capsule* opening by as many valves as styles, each bifid; or by twice as many valves or teeth as styles.

† *Capsule* opening to the middle by valves.

10. ARENARIA. § 2. *Sepals* usually 5. *Petals* entire. *Stamens* usually 10. *Styles* about 3, opposite to the *sepals* when as many.
11. MALACHIUM. *Sepals* 5. *Petals* bifid. *Stamens* 10. *Styles* alternate with the *sepals*. *Caps.-valves* 5, opposite to the *sepals*, bifid at the apex.
12. STELLARIA. *Sepals* 5. *Petals* bifid. *Stamens* 10. *Styles* usually 3, opposite to the *sepals* when as many. *Caps.-valves* twice as many as styles.

†† *Capsule* opening at the extremity by twice as many teeth as styles.

13. HOLOSTEUM. *Sepals* 5. *Petals* toothed. *Stamens* and styles usually 3.

14. MŒNCHIA. Sepals usually 4. Petals entire. Stamens and styles as many as the sepals.
 15. CERASTIUM. Sepals 4—5. Petals bifid. Stamens 4—10. Styles as many as the sepals.

SUB-ORD. I. SILENEÆ. *Sepals united into a monophyllous calyx. Petals and Stamens hypogynous, inserted on the summit of a more or less conspicuous stalk to the Ovary.*

1. DIÁNTHUS Linn. Pink.

Cal. monophyllous, tubular, 5-toothed, with about 4 imbricated opposite *scales* or *bracteoles* at the base. *Pet.* 5, clawed. *Stam.* 10. *Styles* 2. *Caps.* cylindrical, 1-celled. *Seed*s peltate. — Name derived from *Ζεύς, Διός, Jupiter*, and *ανθος, a flower*: dedicated, as it were, to Deity itself, to express the high value that was set upon this charming genus of plants.

* *Flowers clustered.*

1. *D. Arméria* L. (*Deptford P.*); flowers clustered fascicled, scales of the calyx lanceolate-subulate herbaceous downy as long as the tube. *E. B. t.* 317.

Pastures and hedges; not uncommon in England. In Angussshire, but probably introduced. ☉. 7, 8—*Stem* 1—1½ ft. high, branched upwards, downy. *Leaves* linear, opposite and connate, slightly pubescent, upper ones acute. *Limb* of the *petals* rose-coloured with white (not red, as mentioned in *E. B.*) dots, crenate at the margin. *Flowers* scentless.

2. *D. prólifer* L. (*proliferous P.*); flowers clustered capitate, scales of the calyx ovate membranous about the length of the tube, outer ones acute inner ones blunt, leaves rough at the edge. *E. B. t.* 956.

Gravelly pastures in England, rare; Dover; Selkey island, Sussex; near Hampton-court; near Norwich; Hanby Castle, Worcestershire; Ryde, Isle of Wight; Hayling and Portsea islands, Hants; Jersey. ☉. 6—10.—Readily distinguished by its small, deep-coloured *flowers*, of which only one in a head expands at a time, and by the large, dry, brown, and membranous *scales* which envelope the *calyces* of several flowers. *Limb* of the *petals* obcordate, notched.

** *Flowers solitary, one or more on the stem.*

3. *D. * Caryophýllus* L. (*Clove P., Carnation, or Clove Gilly-flower*); stem branched, flowers mostly solitary, scales of the calyx obovate submucronate much shorter than the tube, petals broad dentato-crenate glabrous, leaves linear-subulate grooved glaucous smooth on the margin. *E. B. t.* 214.

On ruined walls in Kent, as on the castles of Deal, Sandown, Rochester, &c. 4. 7.—Few persons, seeing this plant as it grows

on old walls, would suppose it was the origin of one of the "fairest flowers o' the season,"

"The curious choice Clove July-flower,"

or *Carnation* of our gardens, with its endless diversity of colour and form; yet such it is always considered to be.

Mr. Leighton (*Shropsh. Fl.* p. 188.) gives the *D. plumarius* or common Pheasant's-eye Pink, as an inhabitant of old walls at Ludlow and Lufford, and Haughmond Abbey; and perhaps several of the stations usually assigned to *D. Caryophyllus* belong to it: it differs chiefly by the leaves rough on the margin, and the petals bearded and more deeply cut (digitato-multifid). It is the *D. plumarius* DC., but not of Linnæus according to Sir J. E. Smith, who does not distinguish it from *D. Caryophyllus*: the hairy variety of *D. Caryophyllus* found in Kent by Doody and the Rev. G. E. Smith, belongs to it, but there are numerous hybrids or varieties between them. Neither has any pretensions to be accounted native; and we only admit *D. Caryophyllus* because it has been (in name at least) considered a doubtful native for more than 150 years.

4. *D. deltoïdes* L. (*Maiden P.*); flowers solitary, scales of the calyx ovate-acuminate about half the length of the tube, leaves somewhat rough and downy lower ones obtuse, petals crenate glabrous. — α . scales of the calyx about 2. *E. B.* t. 61. — β . scales of the calyx mostly 4, petals nearly white. *D. glaucus* L.

Borders of fields, banks and hedges, on a gravelly or sandy soil, in England and Scotland, extending as far north as Ross-shire. About Edinburgh, &c., where, in the King's Park, grows the var. β . 4. 6—9. — A small plant much branched even from its very base. *Petals* very beautiful, usually rose-coloured, spotted with white, with a white eye enclosed in a deep purple ring. *Stem* pubescent, scabrous.

5. *D. cæ'sius* Sm. (*Cheddar P.*); stems mostly single-flowered, scales of the calyx roundish slightly pointed about four times shorter than the tube, leaves scabrous at the margin, petals unequally jagged bearded. *E. B.* t. 62.

On limestone rocks at Cheddar, Somersetshire. 4. 6, 7. — This exceedingly rare plant has very glaucous *foliage*, and comparatively large flagrant *flowers*, of a delicate rose-colour.

2. SAPONÁRIA Linn. Soapwort.

Cal. monophyllous, cylindrical, 5-toothed, without *bractæas* at the base. *Pet.* 5, clawed. *Stam.* 10, alternate ones opposite the petals but not adhering to their claws. *Styles* 2. *Caps.* oblong 1-celled, or 2-celled at the base, 4-toothed. *Seeds* globosc or reniform. — Named from *sapo*, soap; the plant yielding a mucilaginous juice, which has been employed in place of that useful article.

1. *S. * officinális* L. (*common S.*); leaves ovato-lanceolate,

calyx cylindrical glabrous, capsule 2-celled at the base. *E. B.* t. 1060.

Road-sides, margins of woods, and hedge-banks, especially near cottages. *Æ.* 7, 8. — *Stem* 1—1½ ft. high, rather stout, cylindrical. *Leaves* ribbed, opposite and connate. *Panicle* of numerous large rose-coloured flowers. *Limb* of the corolla obovate.

(*Vaccaria vulgaris* Host has been found in corn-fields, but doubtless introduced; and *Cucubalus baccifer* L., given by Ray as a native of Anglesea, and therefore published in *E. B.* t. 1577, but since discarded, has been found in the Isle of Dogs, by Mr. Luxford and others; but there is no reason for considering it indigenous.)

3. *SILÉNE* Linn. Catchfly.

Cal. monophyllous, tubular, often ventricose, 5-toothed. *Pet.* 5, clawed, mostly crowned at the mouth, and the limb generally notched or bifid. *Stam.* 10, alternate ones opposite to the petals and adhering to the claws. *Styles* 3. *Caps.* 3-celled to the middle or only at the base (rarely 1-celled), 6-toothed, many-seeded. Name supposed to arise from *σάλον*, *saliva*, in allusion to the viscid moisture on the stalks of many species; whence, too, the English name *Catchfly*.

* *Capsule* 3-celled at the base or to the middle.

1. *Stems* tufted, short. *Peduncles* single-flowered.

1. *S. acaulis* L. (*Moss Campion*); caespitose, leaves linear ciliated at the base, peduncles solitary single-flowered, petals crowned slightly notched. *E. B.* t. 1081.

Rocky places on Snowdon. On the Helvellyn side of Grisedale Tarn, Cumberland. Abundant on all the Scottish mountains. *Æ.* 6—8. — *Stems* short, 2—3 inches high, much branched and tufted. *Leaves* patent. *Flowers* a beautiful purple, and apparently diœcious. — One of the greatest ornaments of our alps, not unfrequently found with white flowers.

2. *Stems* elongated. *Flowers* solitary or paniced. *Calyx* inflated, bladdery.

2. *S. inflata* Sm. (*Bladder Campion*); flowers numerous paniced, petals deeply cloven with narrow segments scarcely crowned, calyx inflated reticulated, stem erect, leaves ovate-lanceolate. — *α.* stem and leaves glabrous. *Cucubalus* Behen *E. B.* t. 164. — *β.* stem and leaves downy.

Pastures and road-sides common. — *β.* near Cromer, Norfolk. Banks of the Clyde. *Æ.* 6—8. — Whole plant glaucous or downy, variable in the size and shape of its leaves, and in the more or less numerous flowers. *Petals* pure white.

3. *S. marítima* With. (*Sea Campion* or *C.*); panicles few-flowered, petals with a shallow cleft and broad segments crowned, calyx inflated reticulated, stems spreading, leaves ovato-lanceolate or spathulate. *E. B. t.* 957.

Frequent upon the sea-shore in sandy and stony places, as well as by alpine rills. 4. 6—8. — This, although it has smaller *stems* and *leaves* than the last, has larger *flowers*; yet we will not assert we have done right in again raising it to the rank of a species. In this and the preceding, the *styles* are variable in number.

3. *Stems elongated. Flowers in racemes, and whorled.*

4. *S. Otítes* Sm. (*Spanish C.*); stems erect nearly simple with few leaves, flowers in whorls subdiœcious, petals linear entire not crowned, leaves spathulate. *Cucubalus E. B. t.* 85.

Sandy fields, chiefly in Norfolk, Suffolk, and Cambridgeshire. 4. 6—8. — Remarkable for its small unassuming, diœcious *flowers*, with their linear entire yellowish *petals*.

4. *Stems elongated branched. Flowers in leafy racemes, alternate.*

5. *S. A'nglica* L. (*English C.*); hairy and viscid, petals (small) crowned slightly bifid or obovate entire, calyces with setaceous teeth ovate in fruit.—*α.* flowers white or tinged with red, petals usually bifid. *E. B. t.* 1178.—*β.* flowers white with a red spot on each obovate usually entire petal. *S. quinquevulnera* L.: *E. B. t.* 86.

Sandy and gravelly fields.—*α.* in Surrey, Cambridgeshire, Hertfordshire, Devonshire, Norfolk, Lancashire, North Wales, Essex, Cornwall, and Isle of Wight. In most of the counties on the east coast of Scotland, and in Ayrshire, but certainly introduced.—*β.* near Wrotham, Kent, and Duppa's Hill, by Croydon, Surrey. ☉. 6—11. — More or less viscid. *Leaves* lanceolate, the lower ones spathulate. *Flowers* solitary from the axils of the upper leaves. *Calyx* at first cylindrical, scarcely shorter than the *petals*, erect; at length the *lower* ones, when in fruit, have their pedicels often singularly reflected. Our *var. β.* is a common annual in gardens; it derives its Latin specific name from the 5 deep red spots sometimes observable on its *petals*, resembling marks of blood, but which are often more or less faint.

5. *Stems panicled, leafy. Calyx not bladdery.*

6. *S. nútans* L. (*Nottingham C.*); pubescent, flowers panicled secund cernuous, branches opposite, calyx cylindrical ventricose the teeth acute, petals deeply cloven crowned their segments linear, carpophore as long as the capsule, leaves (of the stem) lanceolate. *E. B. t.* 465. *S. paradoxa* Sm. *Fl. Br.* (not L.)

Limestone rocks, and chalky cliffs in England. Dover Cliff's; about Nottingham; Ormeshead, Caernarvonshire; Isle of Wight, and Brown Downs, near Gosport, Hampshire; Knaresborough, York-

shire; Dove Dale, Derbyshire. N. Queensferry; St. Cyrus, Kincardineshire; and near Arbroath, Scotland. φ . 5—7.—*Stem* 1—1½ ft. high. *Root-leaves* spatulate, acute. *Petals* rather large, white, expanding in the evening. *Teeth* of the capsule reflexed.

7. *S. * Itálica* DC. (*Italian C.*); pubescent, flowers panicled nearly erect, branches opposite, calyx long clavate the teeth blunt, petals deeply bifid not crowned the segments broad, carpophore half as long as the capsule, radical leaves spatulate on long stalks, cauline ones sessile linear-lanceolate. *S. patens* W. Peete in *E. B. S.* t. 2748.

Dartford, Kent; Mr. A. Peete. φ . 6, 7.—This may be at once known from *S. nutans* by the much longer and more clavate calyx, the absence of a crown to its petals, and their broader segments. The petals are white. The whole plant is more or less downy, the panicles slightly viscid. Teeth of the capsule reflexed. It has, we fear, escaped from gardens.

8. *S. cónica* L. (*striated Corn C.*); panicle forked, petals bifid crowned, leaves linear downy, calyx in fruit conical with numerous furrows, the teeth long subulate. *E. B.* t. 922.

At New Romney and Sandown Castle, Kent. Near Bury and Thetford, Suffolk. Dirleton, Haddingtonshire. \odot . 5—7.—*Petals* purple, small. *Calyx* of the flower almost tubular and imbricated at the base, of the fruit so broad and swollen at its base as to be nearly conical; it is moreover finely striate.

6. *Stems elongated. Flowers corymbose. Calyx clavate.*

9. *S. * Arméria* L. (*common or Lobel's C.*); panicles forked corymbose with crowned flowers, petals notched and crowned with awl-shaped scales, calyx clavate and as well as the leaves glabrous, leaves ovato-lanceolate, stem viscid. *E. B.* t. 1398.

Banks of the Dee, half a mile from Chester; now extinct. Yalding, Kent. \odot . 7, 8.—Extremely common in gardens.

** *Capsule 1-celled from the very base.*

10. *S. noctiflora* L. (*Night-flowering C.*); panicle forked or flowers terminal, petals bifid crowned, calyx with long subulate teeth oblong in fruit with 10 connected hairy ribs, leaves lanceolate lower ones spatulate, capsule ovate. *E. B.* t. 291.

Corn-fields in a sandy or gravelly soil, in several counties of England. Coast of Forfarshire; Dirleton, Haddingtonshire; N. Queensferry; Scotland. \odot . 7, 8.—*Stem* 1 ft. or more high. *Leaves* much like the last, pubescent. Upper part of the stem many times dichotomous, each branchlet terminated by a single flower, with a solitary flower in the axil of the fork. *Flowers* rather large, sweet scented, pale-reddish, almost white. *Peduncles* viscid.

(*S. alpestris*, which has also the capsule perfectly 1-celled, was said by the late Mr. Geo. Don to have been discovered by him on a

rock on a mountain to the east of Clova in Angusshire; and specimens from him are preserved in Mr. Borrer's and Dr. Walker Arnott's herbaria; but they appear certainly to have been obtained from a garden. If discovered, it may be recognised by the calyx-teeth ovate blunt, limb of the petals broad and 4-cleft, and the seeds ciliated.)

4. *LÝCHNIS* Linn. *Campion Lýchnis.*

Cal. monophyllous, tubular, 5-toothed. *Pet.* 5, clawed, crowned at the mouth, mostly divided at the border. *Stam.* 10, alternate ones opposite the petals and adhering to their claws. *Styles* 5, or rarely 4. *Capsule* opening by 4-5 or 8-10 teeth.—Named from *λῦχνος*, a *lamp*; the thick cottony substance on the leaves of some species, or some similar plant, having been employed as wicks to lamps.

* *Ovary* 1-celled. *Capsule* 5-toothed. *Eulýchnis.*

1. *L. Flos-Cúculi* L. (*Meadow L.* or *Ragged Robin*); flowers loosely paniced, petals 4-cleft. *E. B.* t. 573.

Moist meadows and pastures, frequent. *℥.* 5, 6.—*Stem* 1—2 ft. high, hairy below, reddish-green, clammy above. *Leaves* lanceolate. *Calyx* and *flower-stalks* reddish-purple. *Petals* rose-coloured. In all this section the appendage at the base of the limb of the petals is membranous and soft.

** *Ovary* 5-celled at the base. *Capsule* 5-toothed. *Viscaria.*

2. *L. Viscária* L. (*red German Catchfly*); petals slightly notched at the extremity, stem clammy at the joints. *E. B.* t. 788.

Dry alpine rocks; on Craig Breiddin, Montgomeryshire; about Edinburgh and Newburgh; near Airly Castle; Glen Farg, and Den of Balthayock, Perthshire. *℥.* 6—8.—*Stems* 1 ft. high, glabrous. *Leaves* lanceolate acuminate. *Flowers* in a compact panicle, large, rose-coloured. *Capsule* distinctly stalked.

3. *L. * alpína* L. (*red alpine Catchfly*); glabrous, petals bifid, flowers corymbose-capitate. *E. B.* t. 2254.

On the summit of Little Kilrannoch, between Glen Prosen and Glen Callader, at an elevation of about 2300 ft.; Forfarshire. Hobcartin Fell, Vale of Lorton, near Cockermouth, Cumberland. *℥.* 6, 7.—*Stem* 5—6 inches high, by no means viscid. *Leaves* lanceolate. *Flowers* rather small, rose-coloured.

*** *Ovary* 1-celled. *Capsule* 10-toothed. *Melandrium.*

4. *L. vespertína* Sibth (*white C.*); flowers subdiœcious, calyx of the pistilliferous flowers with linear-lanceolate elongated teeth, capsule conical the teeth erect. *L. dioica* β. *L.*: *E. B.* t. 1580.

Under hedges and in grass-fields, common. ♂ or *℥.* (?) 6—9.

—*Petals* usually pure white and fragrant in the evening, sometimes, but rarely, reddish. In this and the following the *stem* is 1—2 ft. high, panicle above, pubescent, viscid in a slight degree about the joints. *Leaves* ovate or ovate-lanceolate. *Calyx* in the anther-bearing flowers sub-cylindrical, in the fruit-bearing ones ovate.

5. *L. diúrna* Sibth. (*red C.*) ; flowers subdiœcious, calyx of the pistilliferous flowers with triangular teeth, capsule nearly globose, the teeth recurved. *L. dioica* a. *L.* : *E. B.* t. 1579.

Damp hedge-banks or in woods, not uncommon. 4. 6, 7.—*Petals* red, very rarely nearly white. In both this and the last the *flowers* have occasionally both stamens and pistils, but we have seen none such in which one or other were not abortive.

5. AGROSTÉMMA Linn. Cockle.

Cal. monophyllous, tubular, coriaceous, with 5 teeth. *Pet.* 5, clawed, their border undivided and without a crown. *Stam.* 10, alternate ones opposite to the petals and adhering to their claws. *Styles* 5. *Caps.* opening with 5 teeth, 1-celled. — Name: *αγροστέμμα*, crown of the field, from its being a great ornament to corn-fields.

1. *A. Githágo* L. (*Corn C.*) ; *E. B.* t. 741. *Lychnis* Lam. *Githago* segetum Desf.

Corn-fields, now too frequent, but probably an introduced plant. ①. 6—8.—*Stem* 1—2 ft. high, branched erect. *Leaves* linear-lanceolate. *Calyx* ribbed, its segments much longer than the corolla. *Flowers* large, purple. As now limited this is the only species ; all the others of Linnæus having been referred to *Lychnis*, and among them the *Flos Jovis*, to which the name *Agrostemma* principally referred.

SUB-ORD. II. ALSINEÆ. *Sepals* distinct or nearly so. *Petals* and *stamens* inserted on an hypogynous or perigynous ring. *Capsule* sessile, 1-celled.

6. SAGÍNA Linn. Pearl-wort.

Cal. of 4—5 sepals. *Pet.* 4—5, entire or emarginate, sometimes wanting. *Stam.* 4—10. *Styles* as many as the sepals, and alternate with them. *Valves* of *Capsule* entire, as many as the sepals and opposite to them. *Seeds* small, numerous.—The name (signifying *meat which fattens*) is little applicable to any of the minute plants belonging to this genus.

* *Sepals, stamens and styles* 4, rarely 5. *Eusagina*.

1. *S. apétala* L. (*annual small-flowered P.*) ; annual, stems slightly hairy erect or ascending, leaves aristate fringed, sepals 4 much longer than the calyx very spreading in fruit obtuse or the two outer ones slightly mucronate. *E. B.* t. 881.

Dry gravelly places, and walls, &c., frequent; sometimes upon the sea-shore. Rare in Scotland. ☉. 5—9.—More slender than *S. procumbens*, and annual; leaves narrower, more bristle-pointed, more glaucous and slightly hairy at the margins, sometimes glabrous. Petals always present, obcordate, or wedge-shaped and truncated.

2. *S. ciliata* Fries (*ciliated P.*); annual, stem erect or ascending, leaves aristate glabrous or fringed, "petals none," sepals of the fruit erect or close-pressed to the capsule, 2 outer ones mucronate or aristate.

Dry gravelly places and walls, probably frequent in England. Near Edinburgh; under the stone table on the summit of Kinnoul Hill, and by the road-side to Dundee, near Perth. ☉. 5—9.—We introduce this species with much hesitation as distinct from *S. apetala*, the only certain difference consisting in the direction of the sepals when in fruit. The plant is stated to be nearly glabrous; but our Scotch specimens (and we have seen specimens only from Scotland) are quite as hairy as the *S. apetala*; the outer sepals are usually more decidedly mucronate, or even aristate; but as the leaves are also rather more aristate, such a structure of sepals is a natural consequence. There are said to be no petals in this and the next; still as the normal state of the genus is to possess petals, it is probable that forms of all the legitimate species occasionally occur with them.

3. *S. maritima* Don (*Sea P.*); annual glabrous, stems erect or procumbent only at the base, leaves fleshy obtuse or with a short apiculus, "petals none," sepals 4 roundish-ovate about as long as the capsule erect in fruit. *E. B.* t. 2195.

Sea-coast not unfrequent, chiefly in places occasionally overflowed. ☉. 5—9.—Quite glabrous. *Calyx* blunt, longer, or sometimes shorter than the capsule, sepals erect and close pressed to the fruit. Leaves "rounded at the back;" *Mr. W. Wilson*. This species appears distinct and well-marked, it has a reddish or purplish tinge, especially on the stems and leaves; but we are sometimes inclined to doubt if the difference between it and the two preceding may not arise from the place of growth, and if so, they might be judiciously combined.

4. *S. procumbens* L. (*procumbent P.*); perennial usually glabrous, stems procumbent, central one very short, leaves mucronate, sepals 4 or rarely 5 much longer than the petals spreading in fruit, styles reflexed during flowering. *E. B.* t. 880.

Waste places, and dry pastures everywhere, and at all elevations. 4. 5—9.—The central stem is very short, erect, and without flowers. lateral ones spreading, 2—4 inches long, and often sending out roots from different parts at the insertion of the leaves, and these throwing up new plants. In some situations it grows amongst *S. subulata*, and in others amongst *S. saxatilis*, from both of which it is with difficulty distinguished. Leaves linear-subulate, connate, with membranous margins at the base, tipped with a short pellucid point or mucro.

Peduncles solitary, axillary and terminal, about an inch long, recurved at the apex after flowering, but erect when in fruit. "A pubescent var. occurs in Sussex." Mr. Borrer.

** *Stamens* 10. *Sepals, petals and styles* 5. *Spergella*.

5. *S. saxatilis* Wimm. (*alpine P.*); perennial glabrous or nearly so, stems prostrate slightly rooting, central one short and flowerless, leaves subulate mucronate, peduncles solitary very long, petals shorter than the calyx, sepals in fruit erect and close-pressed to the capsule, capsule longer than the calyx often twice as long. *Spergula saginoides* L.: *E. B.* t. 2105.

Highland mountains, frequent. *Stems* 6—8.—*Stems* many from the root, procumbent below, 2 or 3 inches in length. *Leaves* numerous and rather long at the base, shorter and in remote pairs upon the stem. *Flower* drooping before and after expansion; *capsule* erect, the valves much more narrowed upwards than in *S. procumbens*. *Styles* erect, during flowering. Sometimes confounded with *Arenaria rubella*, but that has the sepals conspicuously 3-nerved.

6. *S. subulata* Wimm. (*awl-shaped P.*); perennial, caespitose, stem procumbent not rooting, leaves subulate aristate, peduncles solitary very long, petals and capsule somewhat longer than the calyx.—*a.* leaves usually ciliated, peduncles and calyx glandular-hairy. *Spergula Sw.*: *E. B.* t. 1082. *Sagina procumbens* *β. Linn.*—*β.* almost quite glabrous. *S. nivalis* *Fries.*

Dry, gravelly, and stony pastures, not uncommon. *β.* Isle of Skye, and Clova mountains. *Stems* 6—8.—This comes very near the last species, and it is not easy at all times to discriminate between them: the common form is more glandular-hairy, while the alpine state is as glabrous but with all the stems elongated. Mr. W. Wilson, however, cannot distinguish the Anglesea *S. subulata* from the Ben Lawers *S. saxatilis*. Both have very much the habit of *S. procumbens*. Mr. Bentham unites them under the name of *S. Linnæi* Presl.

7. *S. nodosa* E. Meyer (*knotted P.*); perennial, leaves subulate glabrous connate, the lower ones sheathing; upper ones bearing tufts of young leaves in the axils, petals much longer than the calyx. *Spergula L.*: *E. B.* t. 694.

Wet, sandy, and marshy places, frequent. *Stems* 7, 8.—Central stem short, without flowers; lateral ones 3—4 inches high, branched, and decumbent at the base, where the leaves are $\frac{3}{4}$ of an inch long, but they gradually become smaller upwards. *Flowers* large, white, 2—3 on the terminal branches, peduncled. Whole plant glabrous or sometimes glandular-hairy. *Cal.* nerveless.

7. BUFFONIA *Sauv.*: *Linn.* Buffonia.

Cal. of 4 sepals. *Cor.* of 4 entire petals. *Stam.* 4. *Styles* 2. *Caps.* flattened 1-celled, 2-valved, 2-seeded.—Name given by Sauvages in honour of the celebrated Buffon.

1. *B. * annua* DC. (*annual B.*); stem loosely panicled from the base, branches spreading short firm, striæ on the calyx straight parallel, capsules scarcely so long as the calyx, leaves subulate spreading at the base. *B. tenuifolia* Sm.: *E. B.* t. 1313.

Said to have been found in Plukenet's and Dillenius' time, about Boston in Lincolnshire, and on Hounslow Heath. ☉. 6. — Linnæus' *B. tenuifolia* is made up of several species; hence it is better to adopt the name given by De Candolle.

8. CHERLÉRIA Linn. Cyphel.

Flowers polygamous. *Cal.* of 5 sepals united at the base and urceolate. *Pet.* none (or "5 perigynous, very minute, entire and obliquely notched"). *Stam.* 10, alternating with glands; *anthers* abortive in the fertile flowers. *Styles* 3. *Caps.* 1-celled, opening with 3 valves, abortive when the anthers are perfect. *Seeds* 5—6, minute.—Named in honour of John Henry Cherler, a friend and coadjutor of John Bauhin.

1. *C. sedoides* L. (*mossy C.*). *E. B.* t. 1212.

Summits of the Highland mountains, especially those of the Bread-albane range. 4. 6—8.—*Roots* exceedingly long, running deep into the earth, bearing upwards innumerable short forked *stems*, and forming a dense mass which scarcely rises above the surface of the soil. *Leaves* crowded, linear-subulate, channelled above, slightly ciliated and glandular at the edge. *Flowers* solitary, imbedded among the dense mass of leaves, yellow green. *Cal.* membranous at the edge. In the fertile flowers the *stamens* are three times shorter than the calyx; when perfect they are as long as the sepals. We ourselves have never seen any *petals*.

9. HONCKÉNYA Ehrh. Sea-Purslane.

Flowers polygamous. *Sepals* 5. *Petals* 5, conspicuous, undivided. *Stamens* 10, alternating with glands: *anthers* abortive in the fertile flowers: *ovary* with 3—5 *styles*, abortive when the anthers are perfect. *Caps.* opening with 3—4 entire valves, or with 5 alternate with the sepals. *Seeds* 8—10, large.—Named after Gerh. Aug. Honckeny, a German botanist.

1. *H. peplioides* Ehrh. (*ovate-leaved S.*). *Arenaria* L.: *E. B.* t. 189. *Alsine* Wahl.

On sandy sea-shores, frequent. 4. 5—8.—*Rhizome* long and creeping, slender. *Stems* decumbent at the base; *branches* erect, leafy upwards. *Leaves* large, decussate, connate, fleshy, shining, a little recurved. *Flowers* solitary or 2—3 together, in the axils of the upper leaves, nearly sessile, closing in the shade. *Calyx* ribless. *Petals* white, small, scarcely longer than the *calyx*, distant, broadly ovate, shortly clawed. Surrounding the *germen* are 10 *glands*, alternating with the *stamens*. " *Styles* 3 in the lower, mostly 5 in the upper

flowers." Torr. and Gr. Capsule large, roundish, with few large, and black seeds. The American *H. oblongifolia* is no longer considered a distinct species; so that this is the only one belonging to the genus.

10. ARENÁRIA Linn. Sandwort.

Flowers all perfect. *Sepals* 5. *Pet.* 5, conspicuous, undivided. *Stam.* 10, or occasionally 5. *Styles* 3—4. *Caps.* 1-celled, opening with 3—5 entire valves (alternating with the sepals when as many), or with 6—10 valves (or teeth). *Seeds* many, minute.—Named from *arena*, sand, the greater number of species growing in sandy soil.

§ 1. *Valves of capsule as many as the styles, entire.* Alsine.

1. *A. verna* L. (*vernal S.*); stems numerous panicle above, leaves subulate 3-nerved when dry, petals obovate and as well as the capsule somewhat longer than the lanceolate acuminate 3-nerved sepals. *E. B. t.* 512. Alsine Wahl.

Rocky and mountainous pastures, in the north of England, Wales, and Cornwall; abundant on Arthur's Seat and in other places about Edinburgh; Mael Duncroisg, Breadalbane: not found in the west of Scotland. *℥.* 5—7.—*Stems* 3—4 inches high, slightly hairy, as are the *calyces* and *peduncles*. The leaves are usually acute or mucronate, but in the Cornish form, supposed to be the obscure *A. Gerardi* Willd., they are bluntish; lower ones crowded, often curved.

2. *A. rubella* Hook. (*alpine S.*); stems numerous, peduncles terminal downy mostly single-flowered, leaves linear-subulate obtuse 3-nerved, petals elliptic-lanceolate and as well as the capsule shorter than the lanceolate very acute 3-nerved calyx. *E. B. S. t.* 2638. Alsine Wahl. *Arenaria quadrivalvis* Br.

Near the summits of the Breadalbane mountains, among soil and broken rocks, rare. Ben Hope, Sutherland. *℥.* 7, 8.—This is quite an alpine or arctic plant. It loves to grow with its root buried under a loose piece of rock, and late in the summer often acquires a reddish tinge. *Stamens* from a glandular disk. *Styles* usually 4, sometimes 3 or 5; the *valves* of the capsule are, consequently, equally variable.

3. *A. uliginósa* Schl. (*Bog S.*); stems prostrate at the base, then erect with 1—3 flowers on long slender peduncles, leaves subulate semiterete bluntish nerveless, sepals ovate acute 3-nerved about as long as the oblong-obovate petals. *E. B. S. t.* 2890. *Spergula stricta* Sw. (not Mich.) Alsine Wahl.

Banks of a stream near the top of Widdy-Bank Fell (not far from Langdon foot-bridge), Teesdale, Durham. *℥.* 6.—Whole plant glabrous. *Stems* caespitose. Nerves of the sepals disappearing near the middle, the margin membranaceous and almost white. The

specific name *stricta* is the oldest, but this plant is very different from the *A. (Alsine) stricta* Mich.

4. *A. tenuifolia* L. (*fine-leaved S.*); stems much branched dichotomous paniced above, leaves narrow linear-subulate acute 3-nerved, sepals narrow-lanceolate 3-nerved about twice as long as the oblong petals, capsule 3-valved as long as the calyx. *E. B. t.* 219. *Alsine Wahl.*

Sandy fields; Norfolk, Cambridgeshire, Oxfordshire, &c. Crammond Island, and near Pettieur Harbour, Frith of Forth; Scotland (scarcely indigenous and not found of late years). ☉. 5, 6.—*Stems* 4—6 inches high, glabrous, throughout remarkably slender, especially the *peduncles*. *Petals* varying a little in length, sometimes obovate. Don alone is said to have seen this in Scotland, but his published specimens are from England.

5. *A. fastigiata* Sm. (*level-topped S.*); stems erect straight, leaves fascicled subulate-setaceous erect, flowers fascicled, sepals much acuminate (white) with two central (green) ribs twice as long as the obovate petals. *E. B. t.* 1744. *Alsine Fenzl.*

On rocks in the mountains of Clova, Angushire, and also Fifeshire: *Mr. Don*. ☉. 6.—Sir J. E. Smith rightly distinguishes this, the *A. fasciculata* of Jacq. and De Cand., from the very rare species so named by Gouan. The Clova specimens which we possess from Drummond as well as Don, are only distinguishable from the *A. mucronata* of DC., of which this is perhaps a variety, by the more compact inflorescence, annual (or biennial) root, and erect stem: it is also found in Switzerland and the Pyrenees in warm rocky places, at no great elevation. It is very peculiar in habit, and quite unlike any other British species. *Seeds* “beautifully toothed like a wheel, each on a long slender stalk.” *Sm.*

§ 2. *Valves of capsule twice as many as the styles.* Euarenaria.

6. *A. Norvégica* Gunn. (*Norwegian S.*); leaves spatulate-obovate fleshy glabrous, sepals half as long as the corolla ovate acute with 3—5 obscure ribs. *E. B. S. t.* 2852. *A. ciliata* β. *Willd.*

On Serpentine Hill, Unst, Shetland; *Mr. T. Edmonstone, Jun.* 4. 7, 8.—Whole plant perfectly glabrous. *Stems* much branched, procumbent; branchlets 1—3-flowered. This has altogether the mode of growth and general aspect of *A. ciliata*; but the *leaves* are succulent and without any ciliæ, and the *sepals* are broader and only obscurely ribbed.

7. *A. ciliata* L. (*fringed S.*); leaves spatulate roughish ciliate, sepals half as long as the corolla lanceolate acute with 3—5 prominent ribs. *E. B. t.* 1745.

Limestone cliffs, near Ben Bulbin, a mountain in Sligo, Ireland. 4. 6—8.—*Stems* much branched, procumbent or ascending, roughish, downy; branchlets 1—5-flowered. *Petals* ovate.

8. *A. serpyllifolia* L. (*Thyme-leaved S.*); leaves ovate acute subscabrous sessile, calyx hairy its outer sepals 5-ribbed about as long as the corolla. *E. B.* t. 923.

Walls and dry waste places, frequent. ☉. 6—8.—*Stems* 2—6 inches in length, erect or procumbent, much branched, pubescent. *Leaves* small, rather rigid. *Flowers* white, on short stalks, from the forkings of the upper part of the stem or the axils of the leaves. *Petals* as long as the *calyx*.—Mr. W. Wilson finds a *var.* at Bangor, with 5 stamens, and the petals only $\frac{1}{4}$ as long as the calyx, which has prominent ribs.

9. *A. trinervis* L. (*three-nerved S.*); leaves ovate acute petiolate 3-(rarely 5-)nerved ciliated, flowers solitary, sepals rough on the keel with three obscure ribs, hilum of the seeds with an appendage. *E. B.* t. 1483. *Moehringia Clairv.*

Shady woods and moist places. ☉. 5, 6.—*Stems* 1 ft. high, much branched, pubescent. *Upper leaves* sessile. *Flower-stalks* an inch or more long, from the forkings of the extremities of the stem; in *fruit* spreading, the upper part deflexed. *Petals* oblong-ovate, white, scarcely longer than the acute *segments* of the *calyx*. Distinguished from all the other known species by the seeds; on which account it has been placed in *Moehringia*, along with *M. muscosa*,—a most unnatural conjunction.

11. MALÁCHIMUM Fries. Mouse-ear Chickweed.

Sep. 5. *Pet.* 5, deeply cloven. *Stam.* 10. *Styles* 5, alternate with the sepals. *Caps.* opening with 5 valves opposite to the sepals, each bifid at the apex, many-seeded.—Named from μαλακός, *soft* or *feeble*, from the nature of the plant.

1. *M. aquáticum* Fr. (*Water M.*). *Cerastium* L.: *E. B.* t. 538.

Sides of rivers and ditches, throughout England, from the Isle of Wight to Yorkshire, but not common. ☿. 7, 8.—*Stems* 1—2 ft. long, angular, dichotomously branched and straggling, viscid upwards. *Leaves* cordate-ovate, acuminate, with short scattered hairs on their surface and margin; upper ones sessile, lower ones only petiolate. *Flowers* solitary in the forks of the stem. *Capsule* longer than the calyx. “*Seeds* beautifully marked with close papillæ with stellate bases;” *Bromf.* Very similar to *Stellaria nemorum*, which however differs by the fewer *styles*, the 6 equal *valves* to the capsule, and the *leaves* usually hairy only on the margin.

12. STELLÁRIA Linn. Stitchwort.

Sep. 5. *Pet.* 5, deeply cloven. *Stam.* 10. *Styles* 3. *Caps.* opening with 6 valves, many-seeded.—Named from *stella*, a *star*; because the corolla spreads in a star-shaped manner.

1. *S. nemorum* L. (*Wood S.*); leaves petiolate cordate, upper ones ovate sessile, panicle dichotomous. *E. B.* t. 92.

In moist woods, principally in the north of England and Lowlands of Scotland. 4. 5, 6.— *Stems* weak, 1—1½ ft. long, often glabrous below, uniformly downy above, except on the peduncles, where the pubescence sometimes forms a line on one side. *Leaves* very large, usually glabrous, but rough with extremely minute elevated dots, occasionally ciliated at the margin, sometimes hairy on both sides. *Sepals* lanceolate, white at the edges. *Petals* narrow, deeply bifid, pure white, twice as long as the sepals. *Receptacle of seeds* linear, elongated: in all the other species it is very short.

2. *S. média* With. (*common Chickweed* or *S.*); leaves ovate lower ones petiolate upper ones sessile, stems with an alternate line of hairs on one side, petals bipartite, stamens 5—10. *E. B. t. 537.* *Albine L.*

Road-sides and waste places, abundant. ☉. *Fl.* almost the whole year.— *Stem* weak, with alternate lines of hairs between each pair of leaves, by which the species is readily distinguished. *Leaves* glabrous, the uppermost sessile; the others on foot-stalks which are fringed with hairs. *Flowers* small, white, on solitary, axillary and terminal stalks. A slender and apetalous *var.* occurs on the Sussex and Isle of Wight coasts, and about Weybridge, Surrey; its calyx is sometimes hairy, sometimes naked.—This species is a good pot-herb, and small birds are very fond of the seeds.

3. *S. Holóstea* L. (*greater S.*); stem nearly erect with 4 rough sharp angles, leaves lanceolate much acuminate minutely ciliated sessile, petals cloven to the middle twice as long as the nerveless calyx. *E. B. t. 511.*

Woods and hedges, frequent. 4. 4—6.— *Plants* 1—1½ ft. high, rather rigid and brittle, somewhat glaucous. *Flowers* large and with much broader petals than the two following, pure white. *Panicle* of few flowers, with leafy bractees.

4. *S. gláuca* With. (*glaucous Marsh S.*); quite smooth and glaucous, stem angled nearly erect, leaves linear-lanceolate entire, flowers upon long solitary axillary footstalks, petals bipartite much longer than the 3-nerved sepals. *E. B. t. 825.*

Marshy places, margins of lakes, &c. 2. 5—7.— *Stems* 1—1½ ft. high. *Bracts* with scarious margins. *Flowers* next in size to those of *S. Holóstea*. Readily known from that and *S. graminea* by its narrower, glaucous leaves; solitary, axillary flowers; and narrower sepals.

5. *S. graminea* L. (*lesser S.*); stem angled nearly erect smooth, leaves linear-lanceolate acute entire glabrous ciliated, panicle much branched, petals bipartite scarcely longer than the 3-nerved sepals.—*α. vulgáris*; stem elongated, panicle loose. *E. B. t. 803.*—*β. scapigera*; stem short, panicle contracted, leaves pubescent at the margins. *S. scapigera Willd. : E. B. t. 1269.*

Dry pastures, fields and heaths, common.—*β.* “By the sides of rivulets in the mountains of Badenoch between Loch Ereachd and Loch

Laggan." *G. Don*. (In other words, between Dalwhinnie Inn and the Old Kirk of Laggan.) 4. 5—8.—*Stem* 1 ft. high, more slender than the two preceding, and readily distinguishable by its much smaller *flowers*, large and branching *panicle*, 3-nerved *calyx*, and entire *leaves*, which are, moreover, by no means so much acuminate. *Bracts* membranaceous, ciliated. *Anthers* red. The *leaves* have the hairs of the *ciliæ* in the common form, and of the pubescence in β . decurved. The station assigned by Don to our *var. \beta*. is frequently misquoted: this however is of little consequence, as we now believe that plant to exist nowhere in a wild state, but to be a mere cultivated form of *S. graminea*.¹ Don cultivated it extensively in his garden at Forfar, from which we have specimens. It was originally described by Willdenow, from a plant in the Berlin gardens, who does not say from whom it was received; but it is not even conjectured to have been from Scotland, and has not been found anywhere else: it was soon introduced into our gardens, treated as an alpine plant, and increased by division, but not by seed, although seed is produced sometimes freely.

6. *S. uliginosa* Murr. (*Bog S.*); leaves ovato-lanceolate entire with a callous tip, flowers in dichotomous panicles, petals bipartite shorter than the sepals, which are combined at the base. *E. B. t.* 1074. *S. graminea \beta. L.* Larbrea *St. Hil.*

In ditches and rivulets, frequent. ☉. 5, 6.—This and the preceding species, besides having the *sepals* combined at the base, have truly perigynous *petals*. Its general habit is that of *Stellaria*, from all the other species of which it is distinguished by the comparatively minute *petals*.

13. *HOLÓSTEUM* Linn. Jagged Chickweed.

Cal. of 5 sepals. *Pet.* 5, jagged at the point. *Stamens* 3—5. *Styles* 3. *Caps.* subcylindrical, 1-celled, many-seeded, opening at the extremity with 6 teeth.—Named from ὅλος, *all*, and ὀστεον, *bone*, by antiphrasis, the texture being the very reverse, soft and delicate.

1. II. *umbellatum* L. (*umbelliferous J.*); leaves elliptical ovate acute, flowers umbellate, peduncle pubescent viscid, pedicels reflexed after flowering at length erect. *E. B. t.* 27.

Rare; on old walls about Norwich, Bury, Eye, and Yarmouth. Hills near Bowling Bay, Scotland. ☉. 4.—A singular and interesting plant, the original *Holosteum* of Linnæus.

14. *MÆ'NCHIA* Ehrh. Mœnchia.

Cal. of 4 sepals. *Pet.* 4, entire. *Stam.* 4 or 8. *Styles* 4. *Caps.* of 1 cell, many-seeded, opening with 8 teeth, at the ex-

¹ In the Glasgow Botanic Garden we have repeatedly observed *S. graminea* to spring up in the vicinity of pots in which *S. scapigera* was cultivated, and about which it had shed its seed.

tremity.—Name given in compliment to *Conrad Mæuch*, Professor of Botany at Hesse Cassel.

1. *M. erécta* Sm. (*upright M.*). *Sagina* L. : *E. B.* t. 609.

Pastures in England, in a gravelly soil. ☉. 5, 6. — *Stem* 2—4 inches high, erect or frequently a little reclining at the base, glabrous as well as the *leaves*, which are opposite, linear-lanceolate, acute, rigid, glaucous. *Sepals* large, acuminate, white and membranous at the margin. *Pet.* lanceolate, as long as the calyx. *Caps.* as in *Cerastium*.

15. CERÁSTIUM Linn. Mouse-ear Chickweed.

Cal. of 5 sepals. *Pet.* 5, cloven. *Stam.* 10. *Styles* 5. *Caps.* bursting at the top with 10 equal teeth.—Named (κερας, a horn) from the rather long and curved capsules of some species.

* *Annual or biennial. Petals not longer than the calyx.*

1. *C. vulgátum* L. (*broad-leaved M.*); hairy nearly erect viscid above, leaves ovate, bractæas herbaceous, petals as long as the calyx about half the length of the curved capsule, flowers mostly subcapitate, calyces oblong longer than their pedicels. *E. B.* t. 789. *C. glomeratum* Thuil.

Fields, pastures, and road-sides, common. ☉. 4—9. — *Stem* 6—10 inches high, branched below, dichotomous above. *Flowers* at first subcapitate, afterwards occasionally in dichotomous panicles. *Petals* narrow, bifid, sometimes wanting. *Caps.* cylindrical, curved upwards.

2. *C. viscósium* L. (*narrow-leaved M.*); leaves oblong-lanceolate, stem hairy viscid spreading, lower bractæas herbaceous upper ones with narrow membranous margins, flowers at first almost fascicled afterwards in elongated dichotomous cymes, calyx about as long as the pedicel and the corolla, about half the length of the curved fruit. *E. B.* t. 790. *C. triviale* Link.

Pastures and waste places, wall-tops, &c. ♂ or ☉. *Fl.* Spring and Summer.—Much resembling the last, but a larger, coarser, and spreading plant, with longer and narrower *leaves*; *calyces* shorter than their footstalks in general, especially when in fruit. Judging from the figure, *C. pumilum* Curtis *Flora Lond.*, seems but the pentandrous or early-flowering state of this species.

3. *C. semidecándrum* L. (*little M.*); leaves ovate or oblong, stem hairy viscid suberect simple bearing a few-flowered cyme, upper half of all the bracts and the sepals membranous, calyx scarcely shorter than the pedicel about twice as long as the petals shorter than the fruit. *E. B.* t. 1630.

Dry waste places in sandy soil, on wall-tops, &c., frequent. ☉ 3—5.—This displays itself, as Sir J. E. Smith well observes, in early spring, on every wall, and withers away before the *C. viscosum*

begins to put forth its far less conspicuous blossoms. *Leaves* usually hairy, sometimes glabrous. *Stamens* usually 5, often 4, occasionally 10. *Fruit* more or less curved, variable in length from a little longer than the calyx to twice as long.

4. *C. tetrándrum* Curt. (*four-cleft M.*); leaves ovate or oblong, stem hairy and somewhat viscid dichotomous with flowers in the forks, the whole a leafy cyme, lower bracteas herbaceous some of the uppermost and the sepals with a narrow membranaceous margin, calyx rather longer than the petals $1\frac{1}{2}$ —4 times shorter than the pedicels, fruit usually the length of the calyx rarely a little longer. *C. atrovirens* Bab: *C. pedunculatum* Bab. *Sagina cerastoides* E. B. t. 166.

Waste ground, walls, and sandy places, especially near the sea. On the east coast of England (Yarmouth), the south (Sussex), and in Wales. About Edinburgh, banks of the Tweed, Lanark, Campsie, Ayr, &c. Howth, Ireland. ☉. 5—7. — *Stamens* 4 or rarely 5, never, so far as we have seen, more numerous. *Flowers* usually 4-cleft. "Petals inversely heart-shaped, shorter than the taper-pointed calyx which is nearly as long as the capsule." Sm.—In comparing this and the preceding species, it may be proper to state that by the lowest bracteas we mean the pair of leaves at that fork where the first pedicel appears: in the three species already noticed the bracteas become suddenly smaller, whereas in *C. tetrándrum* they remain about as large as the leaves, and similar to them, after the cyme has been repeatedly forked. Mr. Bentham is of opinion that all of this section are mere varieties of one species.

** Perennial. *Petals longer than the calyx.*

5. *C. arvénse* L. (*Field C.*); leaves linear-lanceolate, sepals somewhat acute, bracteas membranaceous at the margins and apex, petals twice as long as the calyx. — *α. pubescens*; leaves pubescent especially at the base. E. B. t. 93. — *β. strictum*; stem and leaves glabrous.

Dry, sandy, and gravelly places; less frequent in Scotland. — *β.* Arran, Ireland. 4. 4—8. — *Stems* much branched and decumbent at the base, a span long, slender. *Flowers* large, pure white, 2 or 3 on terminal stalks. *Capsule* scarcely longer than the calyx. Seeds small, acutely tubercled.

6. *C. alpinum* L. (*hairy alpine C.*); subglabrous or clothed with long white soft silky hairs, stem ascending, leaves elliptical ovate or oblong, panicle dichotomous few-flowered, bracteas herbaceous with usually a narrow membranaceous margin, capsule cylindrical-oblong slightly curved. E. B. t. 472. *C. latifolium*, *Lightf. Scot. i. p. 242. t. 9.*

Frequent on the Highland mountains of Scotland. Striden Edge, Helvellyn, England. Very rare in Wales, and not now to be found on Snowdon. 4. 6—8. — Much branched below and creeping

then erect, 3—5 inches high. *Leaves* sometimes lanceolate. *Flowers* large, handsome, white. *Petals* bifid at the point. "Seeds small, acutely tubercled." *H. Watson.*—The more glabrous form is the *C. alpinum* of the French botanists, while the silky one is the *C. tomentosum* Lam.

7. *C. latifolium* Sm.: L.? (*broad-leaved alpine C.*); subglabrous or clothed with short rigid yellowish pubescence, stems prostrate cæspitose, leaves elliptical-ovate, branches mostly single-flowered, bractæas herbaceous, capsule cylindrical oblong nearly straight. *E. B. t.* 473.

Mountains of Wales; Clogwyn y Garnedd, and Clogwyn du'r arddhu, Snowdon, but rare. Ben Lomond, Ben Nevis, Ben Ghlo, &c., in Scotland. 4. 5—8.—Never clothed with long white hairs, of a deeper green than *C. alpinum*, sometimes almost glabrous. The stems are dichotomous and bare of leaves below, and much buried under rocks and stones. *Flowers* solitary, rarely 2, terminal on the branches; when more than one the bractæas are generally oval and foliaceous. "*Seeds* large, rugose." *H. Watson.* A dwarf variety occurs in Unst, Shetland. We agree with Mr. W. Wilson in thinking that there exists scarcely any difference either in flower or fruit between this and the preceding. In both, the capsules are broadly oblong, shining, almost twice as long as the calyx, and nearly straight.¹

8. *C. trigynum* Vill. (*Stitchwort C.*); stems decumbent with an alternate hairy line, leaves oblong-spathulate, peduncles 2 or 3 mostly terminal downy, styles mostly 3. *Stellaria ceras-toides* L.: *E. B. t.* 911.

Breadalbane mountains of Scotland, and mountains to the north of that great range. Near Bantry, Ireland. 4. 7, 8.—*Stem* 4—6 inches long, the lower part bare of leaves, and much branched. *Leaves* glabrous or hairy, subsecund and subfalcate, as observed by Wahlenberg; their points callous. *Flowers* large, pure white. Sir J. E. Smith states that the styles are sometimes 4 or 5; and the capsules, in our specimens, have usually 6, but some 8 or 10 teeth.

ORD. XV. LINACEÆ *De Cand.*

Sepals 4—5, imbricated in æstivation, persistent. *Petals* 4—5, with a twisted æstivation, very fugacious. *Stamens* 4—5, united at the base into an hypogynous ring, with small teeth (abortive stamens) between them. *Ovary* with 3—5 cells, and

¹ Mr. Bentham is of opinion that "the *C. latifolium* of the Alps of central Europe is not a British plant." He here alludes to *C. glaciale* Gaud., the *C. latifolium* of Seringe in De Candolle's Prodromus. *C. latifolium* of Linnæus is attended with difficulty; in his specific character, "foliis ovatis subtomentosis, ramis subunifloris, capsulis globosis," the first is most allied to *C. glaciale*, the form of the leaves and inflorescence agree with *C. latifolium* Sm., but the clothing of the leaves seems to indicate *C. alpinum*. Linnæus refers under *C. alpinum*, and *C. latifolium* to Wulfen, but both of Wulfen's are described with elongated capsules, and appear to be our British ones. Haller's two species, No. 887 and 888 are likewise either these, or the two forms of *C. alpinum*.

as many *styles*. *Stigmas* capitate. *Capsule* globose, crowned with the permanent base of the styles, 3—5-celled; each cell partially divided into 2 by a spurious dissepiment, and opening with 2 valves at the apex. *Seeds* 1 in each spurious cell, inverted. *Embryo* straight, large, thin, with little or no *albumen*.—*Mostly* herbs, with *entire* leaves and without *stipules*.—*Linum catharticum* is a purgative: *L. usitatissimum* is the common *Flax*.

1. LINUM. Petals, stamens and styles 5.
2. RADIOLA. Petals, stamens and styles 4.

1. LINUM Linn. Flax.

Sep. 5, persistent. *Pet.* 5. *Stam.* 5. *Styles* 5. *Seeds* ovate, compressed.—Named from *Lin*, *thread*, in Celtic and also in modern Gaelic.

* *Leaves* alternate.

1. *L.*usitatissimum* L. (*common F.*); annual, leaves alternate lanceolate, sepals ovate acute 3-nerved ciliate, petals crenate, stem subsolitary. *E. B. t.* 1357.

Corn-fields, not unfrequent. ☉. 7.—*Stem* 1—1½ ft. high, slender corymbosely branched above. *Leaves* distant. *Flowers* large, purplish-blue. Valves of *capsule* glabrous.—This, as may be inferred from its name, yields in the strong fibres of the bark of the stem, the valuable flax of commerce; while from the seed a valuable oil is expressed, known by the name of *Lint-seed oil*. The seeds, too, are highly mucilaginous, and much employed in poultices, fomentations, &c.

2. *L. perénne* L. (*perennial blue F.*); perennial, leaves alternate linear acute, sepals obovate obtuse obscurely 5-ribbed glabrous, stems numerous from the same root, peduncles erect. *E. B. t.* 40.

Chalky hills: Cambridgeshire; Hinton, Northamptonshire; Westmoreland, Norfolk, and Suffolk. Near Monkstown, Ireland. 4. 6, 7.

3. *L. angustifólium* Huds. (*narrow-leaved pale F.*); perennial, leaves alternate linear-lanceolate acuminate 3-nerved, sepals elliptical three-ribbed mucronate, stems numerous from the same root. *E. B. t.* 381.

Sandy and chalky pastures, principally near the sea: Kent, Sussex, Norfolk, Suffolk, Isle of Wight, Cornwall. Near Liverpool, and Plymouth. About Dublin. 4. 5—9.—All the three British species of this division have a great similarity in their habit. The best characters, as observed by Sir J. E. Smith, are taken from the calyx. In the present the *petals* are of a paler blue than in the preceding species, and smaller in proportion to the size of the calyx. "*Stems* lax, very irregularly branched. Valves of *capsule* hairy."—*Bromf.*

** *Leaves* opposite

4. *L. cathárticum* L. (*purging F.*); annual, leaves opposite

oblong, stem dichotomous above, sepals elliptical acuminate 1-nerved. *E. B. t.* 382.

Pastures, everywhere abundant. ☉. 6—9.—*Stem* slender, upright, 2—6 inches high. *Leaves* varying from oblong to obovato-lanceolate. *Flowers* gracefully drooping before expansion, white, small. *Petals* oblong, sometimes acute, often obtuse.

2. RADÍOLA *Gmel.* Flax-seed.

Sep. 4, united up to their middle, and mostly 3-cleft. *Pet. Stam.* and *styles* 4.—Named from *radius*, a ray; probably in consequence of the radiating nature of the branches.

1. *R. Millegrána* Sm. (*Thyme-leaved F.*). *E. B. t.* 893
Linum Radiola L.

Moist gravelly and boggy soils, in many places. ☉. 7, 8.—A very minute plant, 1—2 inches high, repeatedly dichotomous. *Leaves* distant, ovate, entire, glabrous, under a high power of the microscope appearing dotted. *Flowers* axillary and terminal, solitary, on short peduncles. *Cal.* segments united, so as to form a monophyllous many-toothed calyx.

ORD. XVI.—MALVACEÆ *Juss.*

Calyx 5-cleft, valvate in æstivation. *Corolla* of 5 petals, regular, twisted in æstivation. *Stamens* indefinite, monadelphous, often united with the petals at their bases. *Anthers* reniform, 1-celled. *Ovary* 1. *Styles* single or several combined. *Stigmas* several. *Fruit* a capsule, with many cells and valves; or composed of many carpels, which are dehiscient or indehiscient, collected into a compact body, or placed in a whorl round the base of the style. *Albumen* none, or fleshy, but not abundant. *Embryo* curved, with twisted and doubled cotyledons.—Herbs, or shrubs, or trees. *Leaves* alternate, with stipules. *Flowers* axillary.—They abound in mucilage, especially the seeds. The stems and roots afford an excellent fibre. *Gossypium* yields the *Cotton*.

1. LAVATERA. Involucre 3-lobed.

2. MALVA. Involucre 3-leaved.

3. ALTHÆA. Involucre 6—9-cleft.

1. LAVATÉRA *Linn.* Tree-Mallow.

Cal. with a 3-lobed involucre. *Carpels* numerous, circularly arranged, 1-seeded.—Named in honour of the two *Lavaters*, friends of Tournefort.

1. *L. arborea L. (Sea T.)*; stem arborescent, leaves with about 7 angles downy plaited, peduncles axillary aggregate single-flowered shorter than the petioles. *E. B. t.* 1841.

On maritime, always insulated, rocks, in the south and west of England. Islet off the coast of Anglesea. Isles in the Frith of Forth. Ireland. ♂. 7—9.—*Stem* 3—5 ft. high. *Flowers* large purple rose-coloured, shining, darker at the base of the petals.

2. *MÁLVA* Linn. Mallow.

Cal. with a 3-leaved *involucre*. *Carpels* numerous, circularly arranged, 1-seeded.—Name altered from *μαλαχη*, *soft*, in allusion to the emollient nature of the species.

1. *M. sylvestris* L. (*common M.*); stem usually erect herbaceous, leaves with 5—7 rather acute deep lobes, peduncles and petioles hairy, fruit glabrous reticulately wrinkled. *E. B.* t. 671.

Waste places and way-sides; not common in Scotland. 4. 6—9.—*Stem* 2—3 ft. or more high, branched. *Flowers* 3 or 4 together, axillary. *Petals* obcordate, usually large and of a purplish rose-colour with deeper veins, combined by the base of their claws. The late Dr. Bromfield found in the Isle of Wight a variety with flowers of a sky-blue colour, another with prostrate stems, and a third with small flowers. Whole *plant*, especially the *fruit*, mucilaginous and emollient.

2. *M. rotundifolia* L. (*dwarf M.*); stem decumbent, leaves roundish-cordate slightly and bluntly 5—7 lobed, fruit-stalks bent down, petals 2—3 times longer than the calyx, fruit pubescent, carpels smooth rounded on the edge. *E. B.* t. 1092.

Waste places and way-sides, not unfrequent in England; rare in Scotland, as about Edinburgh. 4. 6—9.—*Stems* 10—12 inches long, branching only from the root. *Flowers* small, roundish. *Bractes* linear-lanceolate. *Carpels* meeting at the line of junction with a straight line. Fries and some other foreign botanists consider the next to be the true *M. rotundifolia* L., and call this *M. vulgaris*, or *M. neglecta*.

3. *M. *pusilla* Sm. (*small-flowered M.*); stem decumbent, leaves roundish-cordate slightly and bluntly 5-lobed, fruit-stalks bent down, petals the length of the calyx, fruit pubescent, carpels slightly reticulated margined. *E. B.* t. 241. *M. borealis* Wallm.

Hythe, Kent: Hudson. ☉? 7.—Of this as a British plant we know nothing; only one specimen seems ever to have been found, and that was probably introduced with corn: seeds taken from it yielded the specimen from which the figure in the *E. B.* was made in 1795. Supposing it to be a distinct species from the last, the name originally given by Smith seems to be the oldest; but the pubescence of the fruit and reticulation of the carpels appear to vary so much in several allied species, that we fear these characters are only of secondary importance.

4. *M. moschata* L. (*Mush M.*); stem erect, radical leaves

reniform in 5 or 7 broad-cut lobes, cauline ones 5-partite pinato-multifid their segments linear, calyx hairy, leaflets of the involucre linear. *E. B. t. 754.*

Meadows, pastures, and road-sides, especially in a gravelly soil; not unfrequent. *4. 7, 8.*—*Stem* 2—3 ft. high. *Flowers* large, beautiful, rose-coloured, 1—2 from the axils of the terminal leaves. The foliage yields a faint musky smell if drawn through the hand.

[*M. verticillata* L., (Hook. Lond. Journ. of Bot. vi. p. 259., tab. 7, and *E. B. S. t. 2953.*) an erect plant, having leaves with 5 deep acute lobes, nearly sessile flowers scarcely longer than the calyx, and glabrous carpels rounded on the edge and scarcely reticulated, has been found near Llanelly in Wales; but it is neither a native of Britain, nor of Europe, unless as a cultivated plant: the wild state, which is unknown, may exhibit quite a different aspect and character.]

3. *ALTHÆ'A* Linn. Marsh-Mallow.

Cal. with a 6—9 leaved involucre. *Carpels* numerous, circularly arranged, 1-seeded.—Name: *αλθω*, to cure; from its healing properties.

1. *A. officinális* L. (*common M.*); leaves soft and downy on both sides cordate or ovate toothed, entire or 3 lobed, peduncles axillary many-flowered much shorter than the leaves. *E. B. t. 147.*

Marshes, mostly near the sea in England and Ireland. Abundant in Hampshire. Rare and scarcely indigenous to Scotland, as the Solway Frith, Arran, and Campsie. *4. 8, 9.*—*Stem* 2—3 ft. high, remarkable for the dense, exquisitely soft, and starry pubescence of the leaves and stems. *Flowers* 3—4 together, on axillary stalks, large, pale, rose-colour.—Affords an abundant mucilage, and a decoction of it is in very general use for the cure of cough. In France it is made into lozenges, called *Pâtes de Guimauve*.

2. *A. *hirsúta* L. (*hispid M.*); leaves cordate rough with hairs, lower ones obtusely upper palmately and acutely lobed crenate, stem hispid, peduncles single-flowered longer than the leaves. *E. B. S. t. 2674.*

Fields and waste places, rare. Between Cobham and Cuxton, Kent. ☉. 6, 7.—Remarkable for its very hispid stems and calyces.

ORD. XVII. TILIACEÆ Juss.

Sepals 4—5, deciduous, with valvular æstivation. *Petals* 4—5, often with a depression at the base, sometimes wanting. *Stamens* distinct or polyadelphous at the base, generally indefinite. *Anthers* 2-celled, opening longitudinally, introrse. *Glands* 4—5, adnate with the petals to the stalk of the ovary. *Ovary* 1—10-celled. *Style* 1. *Capsule* with one or many seeds

in each cell. *Albumen* fleshy, including an erect *embryo*.—Trees or shrubs, with stipuled alternate leaves, and a mucilaginous wholesome juice, the inner bark exceedingly tenacious.—Russian, or bast-matting is the inner bark of the Lime.

1. *TILIA* Linn. Lime-Tree.

Cal. 5-partite. *Pet.* 5, with or without a nectary at the base. *Ovary* 5-celled; cells with 2 ovules. *Fruit* 1-celled, 1—2-seeded. — Name of obscure origin, perhaps from the Celtic; in modern Gaelic, the *Lime* is called *Teile*.

1. *T. parvifolia* Ehrh. (*small-leaved L.*); nectaries none, leaves glabrous except a woolly tuft in the axils of the nerves and veins beneath, branches and petioles glabrous, fruit oblique with filiform ribs chartaceous brittle at length nearly glabrous. *E. B. t.* 1705. *T. microphylla* Vent.

Woods in Essex, Lincolnshire, Sussex, Wales; “safely to be reckoned indigenous:” *Borrer.* *h.* 7, 8.—*Leaves* when young covered beneath with stellate hairs. Angles or ribs of the fruit often concealed by the pubescence before it falls off.

2. *T. *Europæa* L. (*common L. or Linden-tree*); nectaries none, leaves twice the length of the foot-stalks quite glabrous except a woolly tuft in the axils of the nerves and veins beneath, branches and petioles glabrous, fruit coriaceous downy nearly equal-sided with slightly prominent angles. *E. B. t.* 610. *T. intermedia* DC.

Woods and hedgerows, probably not indigenous. *h.* 7.—*Leaves* pale beneath, but scarcely glaucous. A large and handsome tree; its flowers “at dewy eve distilling odours,” yellowish-green, on a stalked cyme, springing from a large lanceolate foliaceous bractea, which falls off with the fructified cymes. Best distinguished from the last by the fruit.—Linnaeus is said to have derived his own name from the Swedish *Lin*, our Linden- or Lime-tree.

3. *T. *grandifolia* Ehrh. (*broad-leaved downy L.*); nectaries none, leaves downy especially beneath with solitary hairs, axils of the nerves and veins woolly, young branches and petioles hairy, fruit woody downy with prominent angles. *E. B. S. t.* 2720.

Woods and hedges, in several places; scarcely wild. England and Ireland. Blair Athol, Scotland. Near Edinburgh, *h.* 6, 7.—The angles or ribs of the fruit are often obscure when young, but are afterwards prominent. The number of flowers in the umbel or cyme varies from 2 to 9 in all our British species.

ORD. XVIII. HYPERICACEÆ Juss.

Sepals 4—5, distinct or cohering, persistent, frequently with glandular dots. *Petals* 4—5, with a twisted æstivation and

often black dots. *Stamens* numerous (15 or more), polyadelphous, rarely monadelphous or quite distinct. *Anthers* small, versatile. *Ovary* single. *Styles* 3—5, rarely combined. *Stigmas* simple. *Fruit* a capsule of several valves, rarely baccate, several-celled (or imperfectly so by the valves being curved inwards, and scarcely meeting in the axis), or 1-celled: dehiscent septical. *Seeds* minute, numerous, on a receptacle in the axis, or on the incurved margins of the valves. *Embryo* straight. *Albumen* 0.—Herbs or shrubs, with generally opposite leaves, mostly marked with pellucid dots, and commonly yellow flowers. Aromatic and resinous, juice sometimes purgative.

1. *Hypericum* Linn. St. John's Wort.

Cal. 5-partite, or of 5 sepals, inferior. *Pet.* 5. *Filaments* united at the base into 3 or 5 sets (or sometimes almost distinct). *Caps.* many-seeded.—Name: the ὑπὲρικον of Dioscorides.

* *Petals* unequal-sided, without any glands or appendages at the base or between the sets of the shortly connected stamens.

† *Styles* 5. *Petals* deciduous. *Eremanthe*.

1. *H. * calycinum* L. (*large-flowered St. J.*); flowers solitary, segments of the calyx unequal obovate obtuse, leaves oblong, stem shrubby branched square. *E. B. t.* 2017.

Bushy places. Naturalized at Largs, and Balmacarra, Scotland; Ryde, Isle of Wight; Wicklow and Cork, Ireland. *h.* 7—9.—*Flowers* very large, yellow, as in all the genus. *Petals* and sets of *stamens* 5, deciduous. *Ovary* and *capsule* 5-celled, or 1-celled towards the summit.

†† *Styles* 3. *Petals* deciduous. *Stamens* shortly pentadelphous. *Androsæmum*.

2. *H. Androsæmum* L. (*common Tutsan*); styles much shorter than the stamens recurved, capsule pulpy nearly globose, stem shrubby compressed, sepals unequal oval at length larger than the capsule, leaves ovate sessile. *Curt. Fl. Lond. I. t.* 164.

Hedges and shrubby places; Norfolk; Herts; Kent; between Dorking and Guildford; and at Gt. Marlow, Bucks. Not rare in Devon, Hampshire, and Cornwall. Frequent in Ireland, and the west of Scotland. *h.* 6—8.—*Stems* 2 ft. high. *Leaves* large. *Cymes* terminal. *Stamens* deciduous. *Ovary* imperfectly 3-celled. *Fruit* fleshy and resembling a berry, especially when unripe.

3. *H. * Anglicum* Bertol. (*large-flowered Tutsan*); styles nearly straight about as long as the stamens and petals and twice the length of the calyx, capsule when ripe 3-valved at

the apex nearly dry, stem shrubby 2-edged; sepals unequal oval at length recurved, leaves ovate sessile. *H. Androsæmum*. *E. B. t.* 1225.

Hedges and shrubby places. Cliff above Falmouth Harbour, Cornwall: *Mr. Polwhele*. Hills behind Greenock: *D. Stuart, Esq.* Crinan Canal, Argyshire; Culross, Perthshire; Galway, Ireland: *Dr. Balfour*. *h.* 7—9.—We insert this species as a doubtful native, in order to draw attention to it. It differs from *H. Androsæmum* by the larger size of the flowers, considerably larger even than in *H. elatum* Ait. (*Androsæmum parviflorum* Spach in *Ann. Soc. Nat. N.S. v. p.* 361) to which, however, in other respects, it is so closely allied, that we feel much disposed to regard it as a variety of that species: the native country of *H. elatum*, although long known in cultivation, has, we believe, never been satisfactorily determined; that of the present species is also not free from difficulty: from the size of the flowers, long styles, and comparatively dry fruit, it is not likely to be passed over for *H. Androsæmum*, by any one well acquainted with that species, with which it agrees chiefly in the size and form of the leaves. In the specimen from Greenock the styles do not exceed the stamens in length, and although some of the pedicels are two-winged, others appear to be four-edged; we have therefore slightly modified the character proposed by Mr. Babington, to whose remarks in the *Annals of Nat. Hist.* 2d. Ser. xv. p. 92, in proof of this being Bertoloni's plant, we refer. After the stamens fall off, the calyx becomes reflexed, and the still unripe capsule slightly tapers into the base of the three long almost straight styles.

††† *Styles 3. Petals permanent. Stamens slightly triadelphous. (Capsule 3-celled septical.) Euhypericum.*

§ *Sepals entire at the margins or slightly toothed, but nearly without glands.*

4. *H. perforatum* L. (*common perforated St. J.*); stem 2-edged, leaves oblong obtuse with pellucid dots, veins opaque, sepals erect lanceolate acute. — *α.* leaves elliptic oblong. *E. B. t.* 595. — *β.* leaves linear-oblong, sepals more or less toothed.

Woods, thickets, hedges, &c., abundant. *h.* 7—9.—*Stem* 1—2 ft. or more high, branched. *Leaves* with sometimes only a few pellucid dots, but never with the pellucid venation of the next. There are minute black dots on the tips of the *cal.*, *cor.*, and often on the *leaves*. *Valves of the capsule* with two glandular lines on the back, their sides wrinkled with ovoid transverse vesicles.

5. *H. dúbium* Leers (*imperfurate St. J.*); stem more or less quadrangular, leaves elliptic-ovate obtuse usually nearly destitute of pellucid dots, veins pellucid, sepals recurved oblong or lanceolate entire or denticulate. *E. B. t.* 296. *H. maculatum* Crantz.

Rather mountainous woods in various places; not uncommon in Arran, Cumbræ, and both sides of the Clyde. *4.* 7, 8.—Similar

in many respects to the last; for which, perhaps, it is not unfrequently mistaken: the leaves are sometimes as much covered with pellucid dots, so that the only constant mark is in the veins, and even these in the older and lower leaves become frequently opaque. *Corolla* often marked with small black dots. In this, as well as in the following six species, the capsule is striated at the back, with copious slender longitudinal glands.

6. *H. quadrangulum* L. (*square-stalked St. J.*); stem herbaceous 4-angled somewhat branched, leaves ovate with pellucid dots, sepals erect lanceolate acuminate. *E. B. t.* 370.

Moist pastures, sides of ditches and rivulets, 4. 7.—*Stem* 1—2 ft. high. *Panicles* terminal. “Slightly fœtid like *H. hircinum*.” *Bromf.*

7. *H. humifusum* L. (*trailing St. J.*); flowers terminal sub-eymose, stem compressed prostrate, sepals unequal outer ones oblong obtuse mucronate, leaves oblong obtuse glabrous. *E. B. t.* 1226.

Gravelly, heathy, and boggy pastures, stone walls, &c., in many places. 4. 7.—*Stem* slender, about a span long. *Stamens* not more than 5—8 in each of the three sets; whereas in the three preceding there are 10—25 in each. *Styles* very short. *Cor.* with black dots, as well as the *calyx*, and even glandular serratures are sometimes to be seen towards the points of the sepals, particularly of the inner lanceolate ones, but not, we think, so as to justify the plant being placed in the next division.

§§ *Margins of the sepals, with glandular serratures.*

8. *H. linearifolium* Vahl (*linear-leaved St. J.*); flowers terminal eymose, stems ascending terete, sepals slightly unequal all lanceolate acute their margins with numerous (black) spots and glandular serratures, leaves linear obtuse the margins revolute. *E. B. S. t.* 2851.

Cape Cornwall: on dry slopes of hills in several parts of Jersey, particularly on a hill between Ann Port and St. Catherine's Bay: banks of the Teign, Tamar, and Tavy, Devon. 2. 7, 8.—*Flowers* small. *Stem* procumbent below. *Stamens* 30 or more. *H. humifusum* differs from this by its prostrate slightly two-edged stems; oblong, obtuse, and mucronate sepals; oval-oblong leaves; smaller flowers; fewer stamens; broader capsules and shorter styles. *Bab.*

9. *H. pulchrum* L. (*small upright St. J.*); sepals broadly ovate obtuse with (black) glandular serratures, stem erect glabrous, leaves cordate amplexicaul glabrous. *E. B. t.* 1227.

Dry woods and heaths, frequent. 4. 6, 7.—*Stem* 1—2 ft. high, slender, erect, rigid, branched. *Flowers* beautiful, in loose panicles, yellow, tipped, before expansion, with red. *Anthers* red.

10. *H. hirsutum* L. (*hairy St. J.*); sepals lanceolate acute

with (black) glandular serratures, stem erect terete pubescent, leaves ovate or oblong slightly stalked somewhat downy beneath. *E. B. t.* 1156.

Woods and thickets, especially in a chalky soil. *¶.* 7, 8.—*Stem* 2 ft high. *Leaves* rather large, more or less downy, especially beneath.

11. *H. montánum* L. (*Mountain St. J.*); flowers paniculato-corymbose, sepals lanceolate acute with (black) glandular serratures, stem erect terete and as well as the ovate leaves glabrous. *E. B. t.* 371.

Bushy hills in England, especially in a chalky or gravelly soil, but not common. *¶.* 7, 8.—*Stem* 1½—2 ft. high. *Leaves* rather large, more or less perforated, distant, especially above; furnished with black glandular dots near the margins. *Bractæas* and *calyx* beautifully fringed with shortly-stalked glands. *Petals* without dots or glands.

12. *H. * barbátum* Jacq. (*bearded St. J.*); corymbs terminal, sepals lanceolate fringed with long-stalked glands, stem erect terete, leaves ovate with (black) scattered dots beneath. *E. B. t.* 1986.

Side of a hedge near Aberdalgie in Strathearn, Perthshire: *G. Don.* *¶.* 9, 10.—*Stem* 1 ft. or more high. Very distinct in the long glandular hairs of its *calyx*. *Petals* copiously dotted, often toothed or ciliated at the extremity. *Capsule* transversely wrinkled. We possess a specimen from Don; but we do not believe that this species was ever found wild in Scotland.

** *Petals* equal-sided. *Stamens* in each set united to above the middle, with a scale between the sets. *Styles* 3. *Elodca.*

13. *H. elódes* L. (*Marsh St. J.*); sepals with (reddish) glandular serratures glabrous, leaves roundish shaggy, stem terete creeping, panicle of few flowers. *E. B. t.* 109.

Spongy bogs, not unfrequent. Rare in Scotland. *¶.* 7, 8.—*Stem* 6—8 inches long. *Flowers* few, panicled, terminal, pale yellow. *Petals* persistent, with a fringed appendix at the base. *Stamens* 15, triadelphous. *Ovary* and *fruit* 1-celled.

ORD. XIX. ACERACEÆ *Juss.*

Calyx 4—5—9-partite, imbricated in æstivation. *Petals* of the same number, with scarcely any claw, inserted into the margin of an hypogynous disk, or wanting. *Stamens* about 8, inserted on the disk. *Ovary* 2-lobed, 2-celled. *Style* 1. *Stigmas* 2. *Fruit* a double *Samara*, each 1-celled with 1 or 2 erect seeds. *Albumen* 0. *Embryo* curved, with foliaceous wrinkled cotyledons, and an inferior radicle.—Trees, of the temperate parts of the northern hemisphere. Leaves generally simple

and lobed; flowers often polygamous. — *Acer saccharinum* of N. America yields *Maple Sugar*.

1. A'CER Linn. Maple.

Flowers polygamous. *Cal.* lobed or partite. *Cor.* of several petals.—Named from *acer*, sharp or hard (*ac*, Celtic), on account of the hardness of the wood, which was employed in fabricating spears, spikes, &c.

1. A. **Pseudo-plátanus* L. (*greater M.* or *Sycamore*); leaves 5-lobed unequally serrate, racemes pendulous, wings of fruit slightly diverging. *E. B.* t. 303.

In hedges, plantations, and about houses. *h.* 5, 6.—A large tree, with spreading branches and ample leaves. *Flowers* greenish. *Fruit* glabrous, furnished with two long membranaceous wings, which greatly aid in its dispersion. The wood is used for bowls and trenehers and other turnery.

2. A. *campéstre* L. (*common M.*); lobes of the leaves mostly 5 inciso-crenate, racemes somewhat corymbose upright submentose, wings of fruit diverging horizontally. *E. B.* t. 304.

Woods and thickets, not common in Scotland, and perhaps neither indigenous there nor in Ireland. *h.* 5, 6.—A small tree, with rough bark, full of deep fissures. *Leaves* small. *Wood* often beautifully veined, and then much prized.

ORD. XX. GERANIACEÆ Juss.

Sepals 5, persistent, with an imbricative æstivation. *Petals* 5, with a claw. *Stamens* generally monadelphous and twice as many as there are petals, some occasionally abortive. *Ovary* 5-lobed, terminated by a long thick beak (*torus* or *gynobase*), and 5 stigmas. *Carpels* 5, 1-celled, ultimately separating from the base of the beak, together with a long elastic awn (the *style*). *Seed* solitary, without *albumen*. *Embryo* curved. *Cotyledons* convolute and plaited.—Herbs or shrubs with leaves opposite at the joints, or alternate and then opposite the peduncles. No tendrils.

1. GERANIUM. Capsules with a long glabrous recurved awn.
2. ERODIUM. Capsules with a long spiral awn, which is bearded on the inside.

1. GERANIUM Linn. Crane's-bill.

Pet. regular. *Stam.* 10, slightly monadelphous; 5 outer ones opposite the petals, rarely sterile; the other 5 alternating, larger, with a gland at their base. *Caps.* each with a long glabrous recurved awn.—Name: *γέρανον* of the Greeks, from *γέρωνος*, a crane; the fruit resembling the beak of a crane.

* *Peduncles 1-flowered.*

1. *G. sanguineum* L. (*bloody C.*); leaves nearly orbicular in 5—7 deep lobes each of which is trifid, carpels even with bristly hairs at the summit, seeds minutely wrinkled and dotted.—*a.* flowers purple. *E. B. t.* 272.—*β.* prostrate, flowers flesh-coloured with purple veins. *G. Lancastriense With.*

Alpine or limestone pastures, in many places; but not very general, —*β.* Sands in Walney Island, Lancashire. *℥.* 7.—*Stem* 1—1½ ft. high, swelling at the joints. *Peduncles* axillary, long. *Flowers* large, handsome.

** *Peduncles 2-flowered. Root perennial.*

2. *G. phæum* L. (*dusky C.*); peduncles opposite the leaves, calyx slightly awned, petals waved, capsules hairy below transversely wrinkled above, stem erect. *E. B. t.* 322.

Woods and thickets, but usually the outcast of a garden. *℥.* 5, 6.—*Stem* 2 ft. or more high, dichotomously branched. *Leaves* 3—7-lobed, lobes acute, cut and serrated. *Flowers* very dingy, purple-black: a *var.* with white flowers is found on the sands of Barrie near Dundee.

3. *G. * nodosum* L. (*knotty C.*); stem glabrous, leaves opposite with 5 or 3 deep pointed serrated lobes, petals with a deep notch, sepals long-awned, capsules even downy all over. *E. B. t.* 1091.

Said to have been gathered in the mountainous parts of Cumberland, and between Hatfield and Welwyn, Herts: but no specimens have been observed there for many years. Banks of the Tweed. *℥.* 5—8.—Allied to this in the fruit and in several other respects, but differing by the hairy stem, is *G. striatum*, stated to grow on a rabbit-warren near Flimby, between Workington and Maryport, Cumberland, “opposite the first gate after the road has turned from the valley of the Derwent to follow the coast towards Maryport;” also “apparently wild” near Penzance and St. Austell, Cornwall, and Chepstow: but both this and *G. nodosum* are plants almost peculiar to a southern climate, and cannot be expected to be indigenous to us.

4. *G. sylvaticum* L. (*Wood C.*); pedicels of fruit erect, leaves subpeltate with 5 or 7 deep and acute lobes which are cut and serrated, stem erect corymbose, petals obovate slightly notched, their claws bearded, sepals awned, stamens subulate, capsules even hairy, seeds dotted. *E. B. t.* 121.

Woods, thickets, and sides of rivers, chiefly in subalpine countries. *℥.* 6, 7.—*Stem* 1—3 ft. high. *Flowers* purple, rather larger than those of *G. phæum*, but much smaller than in the following species. Specimens with smaller and pale rose-coloured flowers sometimes occur.

5. *G. pratense* L. (*blue Meadow C.*); pedicels of fruit deflexed, leaves 5-partite, lobes multipartite all the segments acute, petals obovate slightly notched their claws ciliated (not bearded)

stamens dilated at the base, capsules even hairy, seeds minutely reticulated. *E. B. t.* 404.

Pastures and moist thickets, particularly near cascades in mountainous countries. About London. *¶.* 6—9. — *Stem* 1—2 ft. high. Readily distinguished by its large purple *flowers* and multipartite *leaves*. The hairs on the fruit, in this and the last, are spreading and glandular.

6. *G. Pyrenæicum* L. (*Mountain C.*); leaves reniform 5—7-lobed, lobes oblong obtuse trifid and toothed at the extremity, stem erect branched softly hairy, petals with a deep notch twice as long as the mucronate sepals, capsules keeled even slightly downy, seeds without dots. *E. B. t.* 405.

Meadows and pastures in many places, but not frequent. *¶.* 6, 7. — *Stem* 2—3 ft. high, much branched. Claws of *petals* densely bearded. Distinguished by the very obtuse segments of its lower *leaves* (for the upper ones are acute and less divided), and its rather small, numerous, purple *flowers*, with cleft *petals*. The *root* of this is fusiform; in all the former it consists of long fibres arising from a præmorse, oblique tap root.

*** *Peduncles* 2-flowered. *Root* annual.

7. *G. lucidum* L. (*shining C.*); leaves roundish 5-lobed, lobes trifid and notched obtuse with a short mucro, calyx pyramidal angular dentato-tuberculate, claw of petals glabrous, capsules transversely wrinkled, seeds without dots. *E. B. t.* 75.

Rocks, walls, and roofs of houses, especially hilly and mountainous countries. ☉. 5—8. — *Stems* spreading, shining (as are the *leaves*), brittle, swelling at the joints. *Leaves* small, lower ones reniform, often of a fine red. *Flowers* small, rose-coloured.

8. *G. Robertianum* L. (*stinking C.* or *Herb-Robert*); leaves bi-tri- or quinate with 3 or 5 deep lanceolate inciso-pinnatifid acuminate segments, calyx angular hairy, claw of petals glabrous, capsules transversely wrinkled, seeds without dots. *E. B. t.* 1486.

Woods, thickets, stony and waste ground, frequent. A small *var.* is common by the sea-side, the β of *Smith*: it is the *G. purpureum* of Miller, and of Forster in *E. B. S. t.* 2648, *G. Raii*, Lindl. Syn. p. 57. ☉. 5—9. — *Stems* spreading, red, brittle. *Flowers* purple, sometimes white.

9. *G. molle* L. (*Dove's-foot C.*); leaves rounded or reniform lobed and cut downy, their segments obtuse, petals notched scarcely longer than the calyx, their claws bearded, capsules transversely wrinkled, seeds without dots. *E. B. t.* 778.

Dry pastures and waste places, common. ☉. 4—8. — *Stems* spreading, procumbent, with long hairs. *Leaves* lobed; lobes broad, cut. *Flowers* small, purple. *Seeds* smooth.

10. *G. pusillum* L. (*small-flowered C.*); petals notched, anther-bearing stamens 5, leaves rounded or reniform palmate

with 5—7 deep trifid lobes, capsules smooth carinate downy with erect appressed hairs, seeds without dots. *E. B.* t. 385.

Waste ground and in gravelly soils, frequent, less common in Scotland. About Edinburgh and Glasgow. ☉. 6—9.—*Stem* weak, prostrate. *Leaves* deeply lobed. *Flowers* very small, bluish-purple.

11. *G. rotundifólium* L. (*round-leaved C.*); leaves roundish or reniform palmately lobed and cut downy, petals entire the length of the calyx, capsules even hairy, seeds dotted. *E. B.* t. 157.

Pastures and waste ground, but not common. ☉. 6, 7.—Distinguished from the last two by the entire *petals* and dotted *seeds*, and from the first of them likewise by the smooth or even *capsules*.

12. *G. disséctum* L. (*jagged-leaved C.*); petals notched rather shorter than the much-awned calyx, leaves 5-partite, lobes linear trifid or cut, capsules even hairy, seeds dotted. *E. B.* t. 753.

Hedges and pastures, gravelly and waste places. ☉. 5—8.—*Stems* spreading. Characterised by the much-divided *leaves* and the short *foot-stalks* of the blossoms, which, as Curtis observes, thus appear as if sitting among the leaves.

13. *G. columbínium* L. (*long-stalked C.*); peduncles longer than the leaves which are 5-partite, the lobes divided into many acute segments, petals entire as long as the much-awned angular calyx, capsules even glabrous, seeds dotted. *E. B.* t. 259.

Dry pastures in several parts of Great Britain, in a gravelly or limestone soil. ☉. 6, 7.—*Stem* very slender, procumbent, its hairs as in *G. dissectum*, reflexed. *Capsules* quite glabrous, or sometimes with a few minute scattered hairs.

2. ERÓDIUM *L'Hérit.* Stork's-Bill.

Pet. regular. *Stam.* 10, slightly monadelphous at the base; 5 opposite the petals, sterile; the other 5 alternating with a *gland* at their base. *Caps.* each with a long spiral *awn*, bearded on the inside.—Name *ερωδιος*, a *heron*; the fruit resembling the beak of that bird.

1. *E. cicutárium* Sm. (*Hemlock S.*); peduncles many-flowered, leaves pinnate, leaflets sessile pinnatifid and cut, stipules lanceolate, petals longer than the calyx, stems prostrate hairy. *E. B.* t. 1768.

Waste ground, frequent. ☉. 6—9.—Whole plant hairy. *Flowers* in small *umbels*, purplish, sometimes white. Perfect *stamens* glabrous, dilated, but not toothed at the base. Beak of *fruit* hairy or glabrous.

2. *E. moscháturn* Sm. (*musky S.*); peduncles many-flowered, leaves pinnate, leaflets nearly sessile ovate unequally cut,

stipules ovate, perfect stamens toothed at the base, stems depressed hairy. *E. B.* t. 902.

Waste places, rare. Frequent in Guernsey and Jersey. In the Craven of Yorkshire, and in Westmoreland. Near Bristol; Shotover Hill, Oxford; and on Ampthill warren, Bedfordshire. Near Plymouth. Bank near Countess Weir Bridge, on the Exe, Devon. Near Gresford. Simmond's Court, Carlingford Castle, and Monkton Church; Ireland. ☉. 6, 7. — Larger than the last, and with much less deeply cut *leaflets*, which yield a powerful smell of musk.

3. *E. maritimum* Sm. (*Sea S.*); peduncles 1—2-flowered, petals very minute or wanting, leaves simple ovato-cordate stalked lobed and erenate, stems depressed slightly hairy. *E. B.* t. 646.

Sandy and gravelly sea-coasts, but rare; as in Sussex, Wales, Cornwall, and Isle of Wight. Steep-Holmes, and near Bristol, far from the sea. Glenluce, Galloway. Hill of Howth, Ireland. 4. 5—9.

ORD. XXI. BALSAMINACEÆ Rich.

Flowers very irregular. *Sepals* 5, or 4 by the union of the two inner or upper ones, lowest cucullate with a spur. *Petals* 5, or apparently 2 by the want of the uppermost and the cohesion in pairs of the two lateral ones. *Stamens* 5; *filaments* more or less united at the extremity; *anthers* 2-celled. *Ovary* of 5 cells alternating with the stamens. *Stigmas* 5, almost sessile, distinct or united. *Fruit* a capsule bursting with 5 elastic valves, or succulent and indehiscent. *Seeds* solitary or numerous, suspended. *Albumen* 0. *Embryo* straight with *radicle* superior.—Herbaceous and succulent plants, without stipules.

1. IMPATIENS Linn. Balsam.

Flowers of apparently 4 *sepals* and 2 *petals*. *Capsule* of 5 elastic valves.—Name (*impatient*) from the sudden opening of the valves of the capsule, when the fruit is touched.

1. I. * *Noli-me-tangere* L. (*yellow B.* or *Touch-me-not*); joints of the stem swelling, leaves ovate serrate petiolate, peduncles solitary many-flowered, spur of calyx loosely recurved and entire at the point. *E. B.* t. 937.

Moist shady woods in Yorkshire, Westmoreland, Lancashire, and some other counties in England and Wales; also at Castlemilk near Glasgow;—but perhaps only escaped from cultivation or planted. ☉. 7, 9. — *Stem* generally 1 ft. high, rounded, succulent, fragile. *Flowers* large, yellow, spotted with orange. *Capsule* bursting elastically and scattering its *seeds* with considerable force; the valves are then spirally twisted.

[*I. fulva* Nutt. of N. America grows on the banks of the Wey, the Basingstoke Canal, and the Thames, from Guildford, and Woking Heath to Chiswick. The spur of the calyx is notched at the point, and so closely reflexed as to be pressed against the sepals. *E. B. S.* t. 2794.]

ORD. XXII. OXALIDACEÆ *De Cand.*

Flowers regular. *Sepals* 5, persistent. *Petals* 5, equal, often cohering at the base and twisted in æstivation. *Stamens* 10, the 5 inner ones opposite the petals and longer than the others; *anthers* distinct, 2-celled. *Ovary* 1, 5-celled. *Styles* 5. *Stigmas* usually capitate or somewhat bifid. *Fruit* a capsule with 5, or 10 valves, or indehiscent. *Seeds* attached to the axis, usually with an elastic fleshy outer integument, which, on bursting open, projects the seed to a distance. *Embryo* in a cartilaginous *albumen*, with its *radicle* towards the *hilum*.—*Mostly* herbs, with *compound acid* leaves; some of them highly sensitive.—*Oxalis Acetosella* abounds in oxalic acid. *O. crenata* of Peru affords a salad in its leaves, and its tubers are eaten as potatoes, but they are not worth a place in a European kitchen-garden.

1. *Oxalis* Linn. Wood-Sorrel.

Cal. not bracteated at the base. *Filaments* slightly combined below. *Caps.* angular, 5-celled. *Seeds* with an elastic integument.—Named from *οξύς*, sharp or acid.

1. *O. Acetosella* L. (*common W.*); leaves all radical ternate, leaflets inversely heart-shaped hairy, scape single-flowered, rhizome scaly. *E. B.* t. 762.

Woods and shady places, frequent; also at a great elevation on the mountains, among shady rocks. *2.* 5, and on the mountains till 8.—*Leaf-stalks* long and slender, reddish. *Leaflets* drooping at night. *Scape* with two scaly bracteas. *Flowers* handsome, drooping, white, with purplish veins. The leaves have a most agreeable acid flavour.—This appears to be the original *Seamrog* or *Shamrock* of Ireland; although the name has long been applied to the much less beautiful *Trifolium repens* or Dutch Clover, both in the Irish and Gaelic languages.

2. *O. corniculata* L. (*yellow procumbent W.*); stem branched, branches procumbent, peduncles mostly 2-flowered shorter than the ternate leaves, stipules united to the base of the petioles. *E. B.* t. 1726.

Shady waste ground, chiefly in the extreme south of England. Devonshire and Cornwall. ☉. 6—9.

(*O. stricta* L. is stated to be naturalised in gardens near Penzance; at Ilstington, Devon; in fields near Northam, North Devon; and in an orchard at Cuckfield, Sussex. This latter station is generally

given for *O. corniculata*, from which *O. stricta* differs by having a more upright, less branched *stem*, more numerous and often whorled leaves, with longer *flower-stalks* and several *flowers* in an *umbel*, and no evident *stipules* at the base of the *petioles*.)

SUB-CLASS II. CALYCIFLORÆ. (ORD. XXIII.—XLIX.)

Corolla (and usually the stamens) perigynous or inserted upon the calyx. Ovary either free or adnate with the tube of the calyx.

CONSPECTUS OF THE ORDERS.

A. *Corolla polypetalous.*

a. *Corolla papilionaceous.*

26. LEGUMINOSÆ.

b. *Corolla regular; stamens 20 or more.*

27. ROSACEÆ. Leaves with stipules.

c. *Corolla regular or nearly so; stamens fewer than 20.*

* *Carpels 2 or more; distinct or nearly so (apocarpous).*

23. STAPHYLEACEÆ. Leaves pinnate, with stipules. Calyx with a conspicuous disk at its base inside. Stamens 5, inserted into the margin of the disk. Pistillum free from the calyx. Styles 2, united at the apex.

27. ROSACEÆ. Leaves with stipules. Disk in the throat of the calyx or inconspicuous.

35. CRASSULACEÆ. Leaves without stipules. Disk none.

** *Carpels united into a solitary 1-celled ovary.*

33. PORTULACACEÆ. Sepals 2. Ovary superior. Placenta central. Leaves without stipules.

[14. CARYOPHYLLACEÆ, § ALSINEÆ. Sepals 4—5. Ovary superior. Placenta central. Leaves without stipules.]

34. PARONYCHIACEÆ. Sepals 5. Ovary superior. Placenta central or ovule solitary. Leaves with stipules.

[10. DROSERACEÆ, § PARNASSIÆ. Sepals 5. Ovary superior. Placentas 4, parietal. Ovules numerous, not comose. Stigmas 4, sessile, simple.]

31. TAMARICACEÆ. Ovary superior. Placentas 3, parietal. Ovules numerous, comose. Stigmas 3, sessile, plumose.

36. GROSSULARIACEÆ. Stamens alternate with the petals. Ovary inferior. Ovules several.

28. ONAGRACEÆ. Stamens 2, alternate with the petals. Ovary inferior, with solitary ovules in each cell.

41. LORANTHACEÆ. Stamens opposite to and upon the petals. Ovary inferior. Ovule solitary.

*** *Carpels united into a solitary 2- (or many-) celled ovary.*

[52. MONOTROPACEÆ. Sepals distinct, imbricated in æstivation. Stamens twice as many as the petals, almost hypogynous. Style 1. Ovary superior. Green leaves wanting.]

51. PYROLACEÆ. Calyx deeply divided, imbricated in æstivation. Sta-

- mens twice as many as the petals, nearly hypogynous. Style 1. Ovary superior. Leaves green, without stipules.]
30. LYTHRACEÆ. Calyx of one piece with teeth, valvate in æstivation. Stamens inserted on the mouth of the calyx, alternate with the petals when as few. Style 1. Ovary superior.
37. SAXIFRAGACEÆ. Calyx deeply divided or spreading, imbricated in æstivation. Stamens twice as many as the petals. Styles 2 or more. Fruit superior or only partly so. Seeds numerous in each cell.
25. RHAMNACEÆ. Calyx valvate in æstivation. Stamens as many as and opposite to the minute petals. Fruit superior or partly so.
24. CELASTRACEÆ. Calyx spreading; calyx and petals imbricated in æstivation. Stamens as many as the petals and alternating with them. Disk large, expanded, flat, closely surrounding the ovary, and covering the flat bottom of the calyx. Fruit superior or partly so, dehiscing, seeds never bony. Leaves simple.
23. STAPHYLEACEÆ. Calyx deeply divided, erect; calyx and petals imbricated in æstivation. Stamens as many as the petals and alternating with them. Disk large, covering the bottom of the calyx. Ovary quite free. Fruit superior. Seeds bony. Leaves pinnate.
28. ONAGRACEÆ. Calyx-segments valvate; petals convolute in æstivation. Style 1. Ovary inferior.
29. HALORAGACEÆ. Monœcious. Sepals 4. Stamens 8. Styles 4. Fruit inferior, splitting into 4 indehiscent 1-seeded achenes. Leaves opposite or verticillate.
38. UMBELLIFERÆ. Petals 5, imbricated in æstivation. Stamens 5, alternating with the petals. Styles 2. Fruit inferior, splitting into 2 indehiscent 1-seeded carpels. Leaves alternate.
39. ARALIACEÆ. Petals valvate in æstivation. Styles several, distinct or combined. Fruit inferior, baccate; cells each 1-seeded. Leaves alternate.
40. CORNACEÆ. Petals 4, valvate in æstivation. Stamens 4, alternating with the petals. Style 1. Ovary inferior. Leaves opposite.

B. *Corolla monopetalous.*

a. *Carpels and styles several, distinct.*

35. CRASSULACEÆ. Stamens inserted upon the corolla.

b. *Carpels united into a solitary ovary.*

* *Ovary inferior or partly superior, with one perfect cell.*

† *Ovules several in each cell.*

- [66. PRIMULACEÆ. Flowers perfect. Placenta central, free. Erect plants.]

32. CUCURBITACEÆ. Flowers imperfect. Placentas parietal. Plants with tendrils.

†† *Ovules solitary in each cell.*

46. COMPOSITÆ. Flowers upon a receptacle, within a common involucre. Anthers of the perfect flowers united. Ovule erect. Albumen wanting.

45. DIPSACACEÆ. Flowers perfect, upon a receptacle, within a common involucre. Anthers and filaments distinct. Ovule pendulous. Albumen fleshy. Leaves opposite.

44. VALERIANACEÆ. Flowers cymose, without an involucre. Anthers and filaments of perfect flowers distinct. Style filiform; stigma trifid. Ovule pendulous. Albumen wanting. Leaves opposite.
42. CAPRIFOLIACEÆ. Flowers cymose. Anthers and filaments distinct. Stigmas 3 sessile. Ovule pendulous. Albumen fleshy. Leaves opposite (*Viburnum*).

** *Ovary inferior or only partly inferior, with 2 or more perfect cells.*

39. ARALIACEÆ. Styles 4—5. Leaves alternate.
42. CAPRIFOLIACEÆ. Stamens inserted upon the corolla. Style 1, or none and stigmas 3 sessile. Leaves opposite without interpetiolar stipules.
43. RUBIACEÆ. Stamens inserted upon the corolla. Styles 1 or 2. Leaves opposite with interpetiolar stipules, or leaves verticillate.
48. LOBELIACEÆ. Stamens free from the corolla; anthers opening longitudinally, as many as the lobes of the corolla, united, dissimilar, Style 1, fringed below the stigma.
47. CAMPANULACEÆ. Stamens free from the corolla; anthers opening longitudinally, as many as the lobes of the corolla, similar. Style 1, not fringed below the stigma.
49. VACCINIACEÆ. Stamens free from the corolla and twice as many as its lobes; anthers opening by pores.

*** *Ovary entirely superior. Stamens free from the corolla; anthers opening by pores.*

- [50. ERICACEÆ. Style 1, with an hypogynous disk. Seed-coat close to the nucleus.
51. PYROLACEÆ. Style 1, without an hypogynous disk. Seed-coat chaffy.]

A. COROLLA POLYPETALOUS. (ORD. XXIII.—XLI.)

ORD. XXIII. STAPHYLEACEÆ Lindl.

Calyx 5-parted, its base covered with a crenate concave disk, imbricated in æstivation. *Petals* 5, alternate with the sepals, inserted into or under the margin of the disk, imbricated in æstivation. *Stamens* 5, opposite the sepals, inserted into the margin of the disk. *Ovary* free, of 2—3 carpels distinct or more or less cohering. *Styles* 2—3 distinct or combined. *Fruit* membranous, chartaceous, or fleshy. *Seeds* globose, bony, with a large truncate hilum, little or no albumen, thick cotyledons and short radicle.—Shrubs. Leaves usually opposite, pinnate, with common and partial deciduous stipules. Flowers in terminal stalked racemes.

1. STAPHYLÉA Linn. Bladder-Nut.

Cal. coloured. *Pet.* erect during flowering. *Carpels* united more or less at the base. *Caps.* membranaceous, bladdered.—Name from σταφύλη, a bunch of grapes, its flowers being in racemes.

1. *S. *pinnata* L. (*common B.*); leaves pinnate, petioles without glands, styles 2 united at the apex. *E. B. t.* 1560.

Thickets and hedges. Yorkshire; about Ashford, Kent. *h.* 6. — A plant of Eastern Europe, without any title to be received into the British Flora, except that of custom.

ORD. XXIV. CELASTRACEÆ *R. Brown.*

Calyx 4—5-cleft, its base covered with a large, flat, fleshy disk, imbricated in æstivation. *Petals* 4—5, alternate with the sepals arising from the edge of the disk. *Stamens* 4—5 alternate with the petals. *Ovary* wholly or in part immersed in the disk, 2—5-celled. *Cells* with one or many seeds. *Fruit* a capsule with 3—5 cells, and 3—5 septiferous valves, or a dry drupe with 1 or two cells. *Seeds* erect, often with an arillodium, never bony. *Albumen* copious, fleshy, with a straight embryo, flat cotyledons, and an inferior radicle.—Shrubs, with simple, mostly opposite leaves, and axillary cymes.

1. *EUONYMUS* Linn. Spindle-Tree.

Cal. flat, 4—5-cleft, having a peltate disk within. *Pet.* 4—5. *Stam.* alternating with the petals, inserted upon the disk. *Caps.* with 3—5 angles, and as many cells and valves. *Seeds* with a coloured fleshy arillodium.—Named from *Euonyma*, mother to the Furies, in allusion to the injurious effects produced by the fruit of these plants.

1. *E. Europæus* L. (*common S.*); flowers mostly tetandrous, petals oblong, branches 4-angled glabrous, leaves ovato-lanceolate, minutely serrate. *E. B. t.* 362.

Woods and hedges; frequent in England, and the south of Ireland, scarcely wild in Scotland. *h.* 5, 6. — *Shrub* 3—5 ft. high. *Bark* green, smooth. *Leaves* glabrous. *Peduncle* bearing a few-flowered umbel. *Flowers* small, white. *Fruit* obtusely angular, very beautiful rose-coloured. *Arillodium* orange-coloured. The berries and even leaves are said to be dangerous, and the whole plant is fetid. Of its tough white wood skewers and spindles are made, and Linnæus tells us it affords the best charcoal for drawing.

ORD. XXV. RHAMNACEÆ *Juss.*

Calyx 4—5-cleft, valvate in æstivation. *Petals* 4—5, inserted on the summit of the tube of the calyx, shorter than and alternate with its lobes, sometimes wanting. *Stamens* 4—5, alternate with the calycine lobes. *Ovary* inferior, or wholly or in part superior, 2—4 celled; cells with one erect ovule. *Fruit* fleshy and indehiscent, or dry and dehiscent. *Seeds* erect. *Albumen* fleshy, rarely wanting. *Embryo* straight; cotyledons large and

flat; *radicle* inferior.—Shrubs or small Trees, with simple usually alternate leaves, minute stipules, and small greenish flowers. Fruit of some purgative, as our *Rhamnus catharticus*; in others the fruit yields a dye, as *R. infectorius*, &c. *Zizyphus Lotus* is supposed to be one kind of *Lotus* of the ancients. *Jujubes* are the produce of the fruit of *Z. vulgaris*.

1. RHÁMNUS Linn. Buckthorn.

Cal. urceolate, 4—5 cleft. *Pet.* nearly flat and notched, often wanting. *Stamens* with ovate, 2-celled anthers. *Disk* thin, covering the tube of the calyx. *Ovary* superior, 3—4-celled. *Berry* with 2—4 cartilaginous nuts, each 1-seeded.—Name, *ῥαμνος*, in Greek, a branch; from its numerous branches.

1. *R. cathárticus* L. (common B.); spines terminal, flowers 4-cleft diœcious, leaves ovate sharply serrate. *E. B. t.* 1629.

Woods, hedges, and thickets, not unfrequent in England. About Dumfries, Scotland. Near Cork and Lough Erne, in Ireland. *h.* 5—7.—A spreading shrub. Leaves with 4 or 6 strong lateral nerves parallel with the margin or rib; serratures glandular. Flowers in dense fascicles. In the barren flower the petals are oblong-ovate, in the fertile one they are linear, incurved above, but not cucullate. Styles 4, united half-way up, spreading. Seeds with a deep external furrow. Embryo bent or slightly folded longitudinally. Berries black, nauseous, powerfully cathartic; they afford a yellow dye in an unripe state; the bark a green dye.

2. *R. Frángula* L. (Alder B.); unarmed, flowers 5-cleft perfect, leaves obovate entire. *E. B. t.* 250.

Woods and thickets in England. Near Auchincruive, Ayrshire. *h.* 5, 6.—A small shrub. Flowers stalked, axillary, 2—3 together, somewhat fascieled, whitish-green. Petals very minute. Style 1. Berries dark purple, purgative. Seeds 2, even, compressed. Embryo flat.

ORD. XXVI. LEGUMINOSÆ Juss.

Calyx of 4—5 sepals, more or less combined, the fifth segment inferior. *Petals* various, generally 5 and papilionaceous. *Stamens* various, generally 10, monadelphous or diadelphous. *Ovary* 1-celled, bearing the ovules along the upper margin, sometimes stalked. *Style* and *Stigma* 1. *Legume* 2-valved, dehiscient or indehiscient. Seeds usually without albumen. Embryo with the radicle straight or recurved upon the cotyledons.—Trees, Shrubs, or Herbs. Leaves alternate, mostly compound and pinnate, with or without tendrils, stipuled.—They possess very various principles and properties, and many of the plants composing this Order are of the greatest service in the

arts, in medicine, and domestic economy. *Indigofera* affords *Indigo*; *Glycyrrhiza*, *Liquorice*; *Astragalus*, *Gum Tragacanth*; *Soja*, *Soy*; *Mucuna*, *Cow-itch* or *Cow-age*; *Erythrina*, *Gum-lac*; *Pterocarpus*, *Gum-dragon*, and *Saunders-wood*; *Brya*, *Jamaica Ebony*; *Acacia*, *Gum-Arabic*, and one kind of *India-rubber*; *Dipterix*, the *Toungin bean*; *Hæmatoxylon*, *Log-wood*; *Cassia* yields *Senna*, and other potent drugs; *Copaifera*, *Balsam of Copaiva*; *Hymenæa*, *Gum Anime*. Their seeds yield food for man and various animals, their herbage for cattle.—All the British genera are papilionaceous, with the standard superior and a vexillary æstivation, and have 10 stamens, monadelphous or diadelphous (9 and 1, the solitary stamen being superior).

I. *Stamens monadelphous.* GENISTEÆ.

1. ULEX. Calyx nearly as long as the cor., bibracteolate, 2-partite; upper segment slightly 2-toothed, lower 3-toothed. Keel blunt. Legume turgid. Leaves simple.
2. GENISTA. Calyx much shorter than the cor., 3-cleft, two upper segments entire, lower one 3-toothed. Keel blunt. Leaves simple or trifoliolate.
3. SAROTHAMNUS. Calyx much shorter than the cor., ebracteolate, 2-lipped, upper lip 2-toothed, lower 3-toothed. Keel blunt. Legume flat. Leaves simple or trifoliolate.
4. ONONIS. Calyx much shorter than the cor., nearly equally 5-cleft. Keel rostrate. Leaves simple or trifoliolate.
5. ANTHYLLIS. Calyx oblique at the mouth with 5 nearly equal teeth. Keels without a beak. Leaves pinnate.

II. *Stamens diadelphous. Leaves 3—5-foliolate.* TRIFOLIEÆ.

6. MEDICAGO. Legume falcate or spirally twisted. Keel of cor. obtuse. Calyx teeth nearly equal.
7. MELILOTUS. Legume nearly straight. Keel obtuse. Calyx-teeth nearly equal. Flowers in long racemes.
8. TRIGONELLA. Legume straight or slightly curved, many-seeded, much longer than the calyx. Petals distinct. Keel obtuse. Flowers capitate or in short racemes.
9. TRIFOLIUM. Legume and ovary nearly straight, 1—4-seeded, scarcely longer than the calyx. Petals cohering by their claws. Keel obtuse. Calyx-teeth unequal. Flowers capitato-umbellate, or in short racemes.
10. LOTUS. Legume nearly straight. Keel rostrate.

III. *Stamens diadelphous. Leaves pinnate. Tendrils 0. Legume dehiscent, several-seeded, imperfectly 2-celled by the inflexion of one of the sutures.* ASTRAGALEÆ.

11. OXYTROPIS. Keel acuminate. Legume with the upper or seed-bearing suture inflexed.
12. ASTRAGALUS. Keel obtuse. Legume with the lower suture inflexed.

IV. *Stamens diadelphous. Leaves pinnate. Tendrils 0. Legume indehiscent, divided transversely into one or more 1-seeded cells.* HEDYSAREÆ.

13. ORNITHOPUS. Flowers umbellate, bracteate. Keel small, obtuse. Legume compressed, contracted on both sides at the joints.

14. ARTHROLOBIUM. Flowers umbellate, without bracteas. Keel small, obtuse. Legume terete, scarcely contracted at the joints.
15. HIPPOCREPIS. Flowers umbellate. Keel acuminate. Legume straight on one side, much contracted on the other at the joints.
16. ONOBRYCHIS. Flowers racemose. Legume of a single 1-seeded joint.
- V. *Stamens diadelphous. Leaves pinnate or apparently simple, usually with tendrils. Legume 2-valved, several-seeded, the suture not introflexed. VICIÆ.*
17. VICIA. Style filiform or angular, equally hairy all round below the point, or mostly so on the under side.
18. LATHYRUS. Style flattened below the stigma, pubescent only on the upper side.

Tribc I. GENISTEÆ. *Legume 1-celled. Stamens mostly monadelphous. Leaves simple or trifoliate, rarely pinnate. Stems generally shrubby. (Gen. 1—5.)*

1. U'LEX Linn. Furze.

Cal. 2-partite, with a small scale or *bractea* on each side at the base; segments nearly entire or upper one 2-toothed, lower 3-toothed. *Standard* bifid, scarcely longer than the *cal.* *Keel* erect, blunt. *Legume* turgid, few-seeded, scarcely longer than the calyx.—*Leaves simple.*—Name from the Celtic *uile, all*; and also, according to Théis, from *ec* or *ac*, a *sharp point*; whence, too, arises the French name *ajonc* or *acjonc*, a *sharp* or *spiny rush*.

1. U. *Europæus* L. (*common F., Whin* or *Gorse*); calyx somewhat hirsute with slightly spreading hairs the teeth nearly obsolete, bracteas large ovate lax, wings manifestly longer than the keel and imbricated over it.—*a. vulgaris*, much branched and spreading, spines usually rigid. *E. B. t.* 742. — *β. strictus*, branches upright, compact, spines soft. U. *strictus* Mackay.

Heathy places, especially in sandy or gravelly soils; rare in the Scottish Highlands. *h.* 2—7. — *Shrub* 3—4 or more feet high, with innumerable green striate *branches*, clothed with acute branching *spines*, and having at their base a few *leaves* which are lanceolate, a little hairy, very minute. *Cal.* coarsely pubescent. *Cor.* bright yellow; *wings* straight incurved. *Legumes* opening elastically, and shedding their seeds the same year they come to maturity. *Var. β.* was discovered in Lord Londonderry's park, county of Down, by Mr. J. White; it is readily propagated by cuttings, and now well known in our gardens and nurseries under the name of *Irish Furze*. It bears few flowers, but may be at all times distinguished from the *var. a.* by its smaller size, its dense and compact, rather formal mode of growth and its very upright branches, which are so soft and succulent that sheep and cattle are extremely fond of them.

2. U. *nárus* Forst. (*dwarf F.*); calyx with the pubescence

adpressed the teeth lanceolate, bracteas minute, wings about the length of the keel. *E. B. t.* 743.

Dry heaths, in many parts of England and Ireland. Near Ardrossan and Dumfries, and in Galloway; Scotland. Orkney. *h.* 7—11. — Smaller than the last in all its parts. The essential character consists in the more minute, rounded, close-pressed, and often hardly discernible *bracteas*, the *calyx* merely pubescent with more distinct teeth, shorter *wings* and the *legume* indehiscent; at least it may be observed remaining on the plant and still closed the year after it has arrived at maturity. Of this there are two forms: the one, which is usually so decumbent at the base as to exhibit only the ends of the branches above the herbage, has the wings flat, straight and shorter than the keel; the other usually erect (*U. Gallii* of Planchon), has the wings falcate and incurved, actually a little longer than the keel, but by their curvation appearing scarcely so long in the recent flower, consequently not folded over each other as in the last species; but there seems to be several intermediate states.

2. GENISTA Linn. Green-weed.

Cal. 2-lipped; upper lip with 2 deep entire segments, lower one with 3 teeth. *Standard* oblong, entire. *Keel* deflexed after flowering, blunt. *Legume* flat or turgid, many-seeded.—Leaves *simple* or *trifoliolate*.—Named from *Gen*, said by Thésis to mean a *shrub* in Celtic.

1. *G. tinctoria* L. (*Dyer's G.*); unarmed, leaves lanceolate or elliptical nearly glabrous, stipules minute subulate, branches terete striate, flowers spicato-racemose, corolla and legumes glabrous.—*α.* branches erect. *E. B. t.* 44.—*β.* stem and branches prostrate.

Pastures, thickets, and borders of fields; frequent in England, rare in Scotland and Ireland.—*β.* Heaths and rocks near Kynance Cove, Cornwall. *h.* 7—9.—*Stem* 1—2 ft. high. *Leaves* rather distant, hairy at the edges. *Flowers* pale yellow, almost sessile, with a small floral leaf or *bractea* at the base. Employed to dye yarn of a yellow colour.

2. *G. pilosa* L. (*hairy G.*); unarmed procumbent, leaves obovato-lanceolate complicate silky beneath, stipules ovate obtuse, flowers axillary on short pedicels, standard keel and legumes downy. *E. B. t.* 208.

Dry sandy or gravelly heaths, rare. About Bury, Suffolk; in the forest, by the road from Maresfield to Groombridge, Sussex; Devonshire; Little Malvern, Worcestershire; near the Lizard and St. Agnes' Head, Cornwall; Pembrokeshire. *h.* 5 and 9.—A small, much branched tortuose, woody-stemmed *plant*. *Flowers* small, bright yellow.

3. *G. A'nglica* L. (*Needle G.*, or *Petty-Whin*); spinous, spines simple none on the flowering branches, leaves ovato-lanceolate

glabrous, stipules obsolete, flowers axillary somewhat racemed, corolla and legumes glabrous. *E. B. t.* 132

Moist heaths and moory ground, frequent. *h.* 5, 6.—*Stems* ascending, very spinous. *Leaves* very small. *Flowers* yellow, solitary in the axils of the leaf-like bractæas.

3. SAROTHÁMNUS Wimm. Broom.

Cal. 2-lipped, without bractæas at its base; upper lip with 2 small teeth, lower one 3-toothed. *Standard* large, broadly ovate. *Keel* very blunt, including the stamens, at length deflexed. Tube of the *stamens* split on the upper side. *Style* very long, thickened upwards and spirally curved. *Legume* many-seeded, much longer than the calyx.—*Leaves simple* or *trifoliolate*.—Named from *σάρων*, to sweep, *Σαρων*, a shrub.

1. *S. scopárius* Wimm. (*common B.*); branches angled glabrous, leaves ternate stalked, upper ones simple, leaflets oblong, flowers axillary shortly pedicellate, legumes hairy at the margin. *Spartium L.*: *E. B. t.* 1339. *Cytisus Link.*

Dry hills and bushy places, frequent. *h.* 5—6.—*Stem* 3—6 ft. or more high. *Branches* long, straight, green. *Flowers* large, bright yellow.—The young green tops are said to be powerfully purgative and diuretic, and they are very bitter. What is called *Irish Broom* is *S. patens*, a native of Spain and Portugal.

4. ONÓNIS Linn. Rest-harrow.

Cal. campanulate, 5-cleft, its segments linear. *Standard* large, striate. *Keel* rostrate. *Legume* turgid, sessile, few-seeded.—*Leaves simple* or *trifoliolate*.—Named from *ονος*, an ass; because the plant is eaten by that animal.

1. *O. arvénis* L. (*common R.*); suffruticose, branches hairy often spinous, lower leaves ternate, the rest simple oblong or oval serrate except at the base, flowers solitary shortly stalked, calyx much shorter than the corolla, legume erect obliquely rhomboid 2—3-seeded, seeds tuberculate.—*a.* procumbent, branches uniformly hairy, calyx longer than the legume and usually shorter than the floral leaves. *E. B. S. t.* 2659.—*β.* erect or ascending, more glabrous, branches with the hairs usually arranged in two rows, calyx rather shorter than the legume and usually longer than the floral leaves. *E. B. t.* 682. *O. campestris Koch.* *O. antiquorum L.?*

Barren pastures and borders of fields. *h.* 6—9.—A very variable plant, erect or procumbent and rooting, more or less spinous; *leaves* ovate or cuneate: *stipules* adhering to the petioles; *flowers* rose-coloured, sometimes white. The *var. β.* is usually more spinous, and with smaller flowers and upper leaves; but it has so much the habit of *a.*, and so many of its characters, that we do not perceive

any advantage in separating them, particularly as we have seen forms between the two.

2. *O. reclináta* L. (*small spreading R.*); herbaceous spreading viscid and hairy, leaves all ternate, stipules broadly ovate, peduncles 1-flowered, calyx about as long as the corolla, shorter than the closely reflexed cylindrical legumes, seeds 14—16 warted. *E. B. S. t.* 2838.

Steep bank, close by the sea, about three miles north-west from the Mull of Galloway. Alderney, one of the Channel Islands. ☉ 6, 7. — This little species is principally found in the South of Europe, and could scarcely have found its way to the first of these localities except along with ballast.

5. ANTHÝLLIS Linn. Kidney-vetch.

Cal. inflated, mouth oblique and 5-toothed. *Pet.* nearly equal in length, erect. *Keel* obtuse or shortly pointed. *Legume* oval, 1—3-seeded, enclosed in the permanent calyx. — *Leaves* usually pinnate. — Name: *ανθος* a flower, and *ιουλος*, a beard or down; from the downy calyces.

1. *A. Vulnerária* L. (*common K., or Lady's Fingers*); herbaceous, leaves pinnate, leaflets unequal, heads of flowers in pairs. *E. B. t.* 104.

Dry pastures, frequent. With red and sometimes white or cream-coloured flowers, in Devonshire, Wales, and South of Ireland, mostly by the sea. 4. 6—8. — *Stem* ascending. *Leaflets* 5—9, lanceolate, entire, hairy, terminal one the largest. *Flowers* in crowded heads; *bracteas* large, digitate or palmate; *calyx* hairy, the teeth ovate, pointed.

Tribe II. TRIFOLIEÆ. *Legume* 1-celled. *Stamens* diadelphous. *Stems* herbaceous, rarely shrubby. *Leaves* 3—5-foliolate. (Gen. 6—10.)

6. MEDICÁGO Linn. Medick.

Cal. with 5 nearly equal teeth. *Keel* obtuse. *Legume* falcate or spirally twisted. — *Leaves* trifoliolate. — Name: the *μηδικη* of the Greeks, so called because it was introduced into Greece by the Medes.

1. *M. falcáta* L. (*yellow Sickle M.*); perennial, stem decumbent slightly hairy, leaflets obovate-oblong toothed, peduncles racemed, racemes many-flowered subcorymbose, pedicels usually longer than the bracteas, legume compressed downy falcate or with one spire. *E. B. t.* 1016. *M. sylvestris* Fries: *Bab.*

Dry gravelly banks and old walls, chiefly in Norfolk, Suffolk, and Cambridgeshire; rare. 4. 6, 7. — *Flowers* usually yellow, some-

times violet. Mr. Babington distinguishes his *M. sylvestris* by the legume "of one flat turn annular," while in *M. fulcata* it is said to be "straightly sickle-shaped twisted not annular."

2. *M. *satíva* L. (*purple M.*, or *Lucerne*); perennial, stem usually erect, leaflets obovate-oblong toothed, peduncles many-flowered racemed, pedicels usually shorter than the bracteas, legumes compressed downy twisted 2—3 times in a loose spire. *E. B. t.* 1749.

Hedges, pastures, and borders of fields, not wild. 4. 6, 7.— This has purple, or sometimes yellow *flowers*, and a spirally twisted *pod*, and bears a great resemblance to the preceding, of which it has been suspected to be only a cultivated state. In habit they both vary much, but still differ remarkably from all the following.

3. *M. lupulina* L. (*black M.*, or *Nonsuch*); annual, leaflets obovate-cuneate, stipules nearly entire, peduncles many-flowered, spikes dense oval, legumes compressed unarmed kidney-shaped. *E. B. t.* 971.

Abundant in waste and cultivated grounds. ☉. 5—8.— A valuable plant in agriculture, very similar in habit to *Trifolium filiforme*. *Stems* procumbent or ascending, in this and all the following. *Flowers* crowded, small, yellow. *Legumes* small, 1-seeded, rugged with longitudinal prominent veins, of a black colour when ripe.

4. *M. mínima* L. (*little Bur-M.*); annual, downy, leaflets obcordate, stipules nearly entire, peduncles few-flowered, legumes compactly spiral subglobose, the spires (about 4) narrow keeled at the margin with a compact double row of uncinate prickles. *E. B. S. t.* 2635.

Sandy fields and waste places, rare. Narburgh, Norfolk; Newmarket, Cambridgeshire; between Sandwich and Pegwell, Isle of Thanet, Kent; Landguard Fort and elsewhere on the coast of Suffolk. ☉. 5—7.— Ray's plant from Orford, Suffolk, supposed by Smith to be *M. muricata* All., is more probably the present species.

5. *M. maculáta* Sibth. (*spotted M.*); annual, nearly glabrous, leaflets obovate, stipules toothed, peduncles few-flowered, legumes compactly spiral compressed, the spires furrowed at the edge and fringed with a double row of long spreading curved prickles. *M. polymorpha E. B. t.* 1616.

Gravelly pastures in the middle and south of England. Ormeshead, North Wales. ☉. 5—8.— *Leaflets* marked with a purple spot in the centre. *Legume* with only 2—3 spires, the edge thick with 4 ridges and a central furrow.

6. *M. denticuláta* Willd. (*reticulated M.*); annual, nearly glabrous, leaflets obcordate, stipules lacinated, peduncles few-flowered, legumes broad loosely spiral and flat with 2—3 spires deeply reticulated the margin thin keeled with a double com-

compact row of prickles. — α . prickles subulate often curved or hooked. *E. B. S.* t. 2634. — β . prickles minute straight.

First discovered on the coast of Kent, but since found in several of the eastern and southern counties of England. ☉. 5—8. — The legumes are beautifully reticulated, and quite unlike any of the preceding.

7. MELILÓTUS *Tourn.* Melilot.

Cal. 5-toothed; teeth nearly equal. *Pet.* distinct, deciduous. *Keel* obtuse. *Legume* 1- or few-seeded, indehiscent, longer than the cal. — Flowers in long racemes. Leaves trifoliolate. — Name: *mel*, *honey*, and *Lotus*, the genus so called.

1. *M. officinális* L. (*common yellow M.*); legumes 1—2-seeded ovate compressed pointed irregularly veined and rugose hairy, racemes lax, corolla more than twice as long as the calyx, petals all of nearly equal length, stem erect. *Trifolium Sm.*: *E. B.* t. 1340.

Bushy places and way-sides, not frequent. ♂. or ♀. 6—8. — *Stems* 2—3 ft. high. *Leaves* obovate, serrate. *Flowers* yellow, in unilateral pedunculated axillary racemes. *Legumes* 3—4 times longer than the calyx, nearly twice as large as in *M. alba*, and less prominently wrinkled. — This plant while drying smells like *Anthoxanthum odoratum*.

2. *M. arvensis* Wallr. (*Field M.*); legumes 1—2-seeded ovate obtuse mucronate transversely plicate rugose, racemes lax, corolla twice as long as the calyx, wings and standard equal longer than the keel, stem branched from the base ascending. *E. B. S.* t. 2960.

Near Thetford and Cambridge. ♂. 7, 8. — *Flowers* yellow in British specimens, but sometimes found white abroad. Easily distinguished when in fruit.

3. *M. *álba* Lam. (*white M.*); legumes 1—2-seeded ovate obtuse mucronate reticulate-rugose glabrous, racemes lax, corolla twice as long as the calyx, keel and wings shorter than the standard, stem erect. *M. leucantha Koch*: *E. B. S.* t. 2689. *M. vulgaris Brit. Fl.* (former editions).

In many parts of England and Scotland, but probably introduced with corn or ballast. ♂. 7, 8. — *Flowers* white.

[*M. parviflora* Desf. has been observed in various places about Wandsworth, but is not indigenous: it is easily recognised by its subglobose very obtuse legumes which are distinctly reticulated with wrinkles, and contain only one large globular seed: the racemes are dense when in flower but afterwards elongated and lax.]

8. TRIGONÉLLA Linn. Fenugreek.

Cal. 5-toothed; teeth nearly equal. *Pet.* distinct; *Keel* obtuse. *Ovary* many-seeded. *Legume* straight or slightly curved, many-seeded, much longer than the calyx, 2-valved.—Flowers in few or many flowered heads, or short racemes. Leaves trifoliate.—Named from τρεῖς three, and γωνία, an angle; on account of the corolla appearing triangular and tripetalous, most of the species having a minute keel.

1. *T. ornithopodioides* DC. (*Bird's-foot F.*); peduncles about 3-flowered, legumes compressed about 8-seeded nearly twice as long as the calyx, leaflets obcordate toothed at the extremity, stems decumbent. *Trifolium* L.: *E. B.* t. 1047.

Dry sandy pastures, mostly near the sea, not very general. ☉. 6, 7.—Stems spreading, 2—5 inches long. Flowers small. Wings considerably shorter than the standard and longer than the keel; but the latter is longer than the calyx and cannot be called minute in this species: still the distinct petals and long legumes accord better with this genus than with *Trifolium*.

9. TRIFOLIUM Linn. Trefoil. Clover.

Cal. 5-toothed; teeth unequal. Wings united by their claws to the obtuse keel, persistent. *Legume* 1—4-seeded, indehiscent, about as long as the calyx by which it is enclosed.—Flowers capitate or densely umbellate. Leaves trifoliate.—Named in allusion to its 3 leaves or leaflets.

* Flowers, pedicellate (white or reddish), at length deflexed; corolla at length scarious.

1. *T. répens* L. (*white T.*, or *Dutch C.*); heads on long peduncles, umbellate globose, legumes with 4 seeds, calyx-teeth unequal, leaflets obcordate serrulate, stems creeping. *E. B.* t. 1769.

Meadows and pastures, frequent. 4. 5—9.—Peduncles longer than the leaves. Heads of flowers white; each flower is on a foot-stalk which becomes recurved after flowering, and then all the legumes are drooping and covered with the withered brown corollas. This trefoil is in great repute for pastures. The leaflets have often a dark spot at their base, with a white line bordering it near the middle.

[Allied to this is *T. Vaillantii* Poir. and Sm. in Rees's Cycl., *T. elegans* Savi, which has been met with in clover-fields in Surrey, introduced with seed. It has an ascending stem, short petiole, and 2-seeded legume.]

** *Flowers sessile. Calyx not inflated. Standard deciduous or unaltered. Legumes 1- or 2-seeded.*

† *Calyx with an elevated hairy ring in the throat.*

2. *T. ochroleúcum* L. (*Sulphur-coloured T.*); heads stalked terminal solitary, calyx pubescent, the teeth erect in fruit subulate, lower one much longer than the rest, leaflets elliptic or obovate, those of the lower leaves heart-shaped, stem ascending downy. *E. B. t.* 1224.

Pastures and way-sides in England, on gravel or chalk. Frequent also in the clayey soil of Norfolk and Suffolk. γ . 6—8.—A foot or more high. *Petioles* long. *Stipules* subulate, ribbed. Heads of *flowers* large, at first hemispherical, at length oval, cream-coloured. Throat of the *calyx* with a thickened ring, pubescent within on its upper side. The *corolla* turns brown and is persistent.

3. *T. pratense* L. (*common purple C.*): heads dense ovate sessile, calyx hairy, its teeth setaceous ciliated, lower one longer than the rest $\frac{1}{2}$ longer than the tube of the corolla, stipules ovate bristle-pointed, leaflets oval or obcordate, stems ascending. *E. B. t.* 1770.

Meadows and pastures, frequent. γ . 5—9.—*Flowers* reddish-purple. Throat of the *calyx* with a thick hairy ring, in this and the next. This is the common *Clover*, so much cultivated for hay. The *leaflets* are oval obovate or obcordate, often marked with a white lunulate spot.

4. *T. médium* L. (*zigzag T.*); heads lax subglobose stalked solitary terminal, calyx glabrous, the teeth setaceous hairy, lower one longer than the rest about equal to the tube of the corolla, stipules lanceolate acuminate, leaflets elliptical, stems branched zigzag. *E. B. t.* 190.

Pastures frequent. γ . 6—9.—*Stem* remarkably zigzag. Heads of *flowers* larger than the last, deeper purple. *Leaves* spotless. Inferior in quality to *T. pratense*, but better for pasture on light soils.

5. *T. maritimum* Huds. (*Tcasel-headed T.*); heads ovate-globose stalked terminal, teeth of the calyx ciliated rigid at first subulate erect, the lower one much longer and larger than the rest shorter than the claws of the petals, all of them in fruit enlarged and spreading, stipules subulate-lanceolate elongated, leaflets oblong-obovate, stem ascending. *E. B. t.* 220.

Salt-marshes on the east coast of England as far north as Norfolk, and south coast as far as Somersetshire. Newport, Monmouthshire. Near Kilbarrack-church, co. Dublin. ☉. 6, 7.

6. *T. * incarnátum* L. (*crimson C.*); heads ovate at length cylindrical stalked solitary terminal, calyx hairy, the teeth lanceolate-subulate nearly equal shorter than the corolla in

fruit spreading, stipules ovate, leaflets obcordate. — *α*. flowers reddish-purple. *E. B. S. t.* 2950. — *β*. flowers pale yellow.

α. Naturalised in a few places in the south of England and Jersey. — *β*. Lizard point, Cornwall, “decidedly indigenous.” *Rev. W. S. Hore.* ☉. 6, 7.—Mouth of the calyx hairy in fruit.

7. *T. * stellatum* L. (*starry-headed T.*); villous, heads terminal globose stalked, calyx hairy, its tube closed with hairs, the teeth longer than the corolla setaceous at length dilated veined and spreading, stipules broadly ovate crenate ribbed, leaflets obcordate, stem short spreading. *E. B. t.* 1545.

Sea-shore, Sussex, between Shoreham harbour and the sea, in great plenty. ☉. 6—8.—A singular and beautiful species, with long *calyces*, and, at first, straight, setaceous *teeth*, which conceal the small cream-coloured *corolla*, and then become greatly enlarged, spreading in a stellated manner.

8. *T. arvense* L. (*Hare's-foot T.*); heads very hairy soft cylindrical terminal stalked, calyx-teeth longer than the corolla permanently setaceous at length somewhat spreading, stipules ovate-acuminate, leaflets lanceolate obtuse, stems erect much branched. *E. B. t.* 944.

Corn-fields and dry pastures, abundant. ☉. 7—9.—*Stem* 6—12 inches high. *Flowers* very minute, almost white. Remarkable for its numerous, subcylindrical, soft, hairy *heads* or *spikes*.

9. *T. striatum* L. (*soft knotted T.*); downy, heads terminal and axillary ovate subsolitary sessile, calyx in fruit ventricose striate very rigid hairy with unequal straight small setaceous teeth, leaflets obcordate or obovate nearly entire, stipules ovate cuspidate, stems ascending. *E. B. t.* 1843.

Dry pastures and fields, frequent. ☉. 6, 7.—*Stem* 4—10 inches long, more or less procumbent or reclined, pubescent or silky. *Leaves* in this and the next with the veins straight and at the margin not thickened. *Flowers* small, purplish-red. *Cal.* deeply furrowed, oval, a little swollen, with 5, almost setaceous, straight, not spreading *teeth*; its throat marked with a thick ring.

10. *T. Boccóni* Savi (*Boccone's T.*); pods terminal and axillary sessile ovate-cylindrical, calyx cylindrical in fruit, the teeth unequal subulate straight, leaflets obovate or oblong-lanceolate toothed glabrous above, stipules oblong with a long subulate point. *E. B. S. t.* 2868.

Dry places in Cornwall, very rare. Cadgwith near Ruan Minor; and Cathellian between the Lizard point and Kynance cove. ☉. 7.—*Stem* 2—6 inches high. *Calyx* not ventricose in fruit as in the last, and not spreading as in the next species: its throat hairy within.

11. *T. scabrum* L. (*rough rigid T.*); heads terminal and axillary sessile ovate, calyx in fruit cylindrical, the teeth un-

equal subulate in fruit spreading very rigid 1-nerved, leaflets obcordate serrulate, stipules ovate-cuspidate, stems procumbent. *E. B. t.* 903.

Chalky or dry sandy fields near the sea, on the east coast to Kincardineshire, on the west to Anglesea. ☉. 5—7. — A small spreading *plant* with many terminal and axillary, sessile, ovate *heads*, very rigid in fruit. *Leaflets* with the veins thicker and curved near the margin.

†† *Throat of the calyx naked.*

12. *T. glomerátum* L. (*smooth round-headed T.*); heads terminal and axillary sessile globose, calyx-teeth ovate very acute leafy veiny at length reflexed, leaflets obcordate toothed, stipules ovate much acuminate, stems procumbent. *E. B. t.* 1063.

Gravelly heaths and pastures in the east and south of England. ☉. 6. — Similar to the last, but with rounder *heads*, and broader, greener, and more foliaceous and spreading *teeth* to the *calyx*.

13. *T. stríctum* L. (*upright round-headed T.*); glabrous, heads terminal and axillary stalked globose, calyx at length campanulate with nearly equal subulate spreading teeth, leaflets elliptic lanceolate denticulate, stipules rhomboid pointless denticulate, stems erect. *E. B. S. t.* 2949.

Rocky banks near the sea, rare. Landewednack, and Old Lizard Head, Cornwall. Jersey. ☉. 6, 7. — *Stem* 2—3 inches high in British specimens, often 6—10 inches in foreign ones. *Leaves* glabrous, beautifully striate and toothed, lower ones obovate. *Stipules* large, pointless, with glandular teeth. *Heads* with a minute membranous cup-shaped involucre at their base; *bracteoles* none at the base of the flowers. *Flowers* never truly deflexed as in the foreign *T. parviflorum*, although by the ripening of the fruit the lower ones sometimes appear so.

14. *T. suffocátum* L. (*suffocated T.*); heads sessile roundish, petals shorter than the membranaceous faintly striate calyx whose teeth are broadly subulate falcate recurved. *E. B. t.* 1049.

Sandy sea-shores, rare. On the coasts of Norfolk and Suffolk, Anglesea and the south of England. ☉. 6, 7. — *Stems* 3—4 inches long. Remarkable for its dense sessile *heads* of inconspicuous *flowers* and for its thin, delicate, scarcely striate *calyx*. Whole plant glabrous, unless *T. congestum* Guss. be considered a variety.

15. *T. subterráneum* L. (*subterranean T.*); heads lateral stalked hairy of few flowers, at length deflexed and throwing out from their centre thick fibres palmated at the extremity (abortive calyces) which are closely bent down over the reflexed fruit. *E. B. t.* 1048.

Dry gravelly pastures in England. ☉. 5, 6. — *Stem* 3—6 or 8

inches long, decumbent, hairy, with large, ovate, membranaceous *stipules*. *Flowers* long and very slender, almost white. *Peduncles* at length elongated; so that the heads of flowers reach the ground: the young *fruit* then becomes deflexed, and from the top of the peduncle there arise many thick short fibres with 5 palmated teeth at their extremity, which soon become recurved over the fruit and serve to bury it in the soil. From the number of teeth terminating each of the above-mentioned fibres, as well as from their comparative length and thickness, it is natural to conclude, with De Candolle, that the latter are abortive *calyces*. *Petals* partially caducous. *Legumes* large, ovate-globose.

*** *Flowers sessile. Calyx with the upper lip remarkably inflated after flowering and arched above. Standard deciduous.*

16. *T. fragiferum* L. (*Strawberry-headed T.*); heads with a multifid involucre as long as the calyx globose upon long axillary stalks, calyx after flowering inflated membranaceous reticulated downy with the two upper teeth bent down, stem creeping, leaflets obcordate serrated. *E. B. t.* 1050.

Meadows and pastures. 4. 7, 8.—*Flowers* very small, purplish-red. The heads of *flowers*, nearly globose at first but completely so in fruit, are then an inch in diameter, and often more or less coloured, so as not unaptly to represent a strawberry. Mouth of the *calyx*, as in the following species, very oblique when inclosing the fruit, from the one half remaining unaltered while the other becomes enlarged and inflated.

17. *T. * resupinatum* L. (*reversed T.*); heads with a minute involucre at the base hemispherical at length globose on stalks at first only about as long as the petiole, corollas resupinate, calyx after flowering membranaceous reticulated inflated hairy acute, two of the teeth longer patent, leaflets obovate, stem prostrate. *E. B. S. t.* 2789.

Meadows near Bristol; near the Poole ballast-quay at Ham, Dorset; Cheshire, near New Brighton; Lancashire, near Everton. ☉. 7.

**** *Flowers usually pedicellate (bright yellow). Standard persistent, deflexed, dry, enveloping the fruit.*

18. *T. agrarium* L. (*Hop T.*); heads broadly oval many-flowered dense, pedicels much shorter than the calyx, standard at length deflexed furrowed, leaves stalked, leaflets obcordate, central one on a longer stalk. *T. procumbens* *E. B. t.* 945; *Brit. Fl.* (former editions).

Dry pastures and borders of fields, frequent. ☉. 6—8. — Primary or central *stem* erect; lateral ones or branches ascending or procumbent, sometimes wanting. This is well distinguished from the following by its large, dense, hop-like *heads of flowers*, and the *standard* which is striate when old.

19. *T. procumbens* L. (*lesser yellow T.*); heads of 10—20 close flowers on rigid peduncles, pedicels rarely half the length of the tube of the calyx, upper calyx-teeth about $\frac{1}{3}$ of the length of the lower, standard truncate obscurely furrowed much broader than and quite covering the mature legume, lower leaf-stalks much longer than the stipules, leaflets obcordate central one on a longer stalk, stems decumbent hairy. *T. minus* *Relh.*: *E. B.* t. 1256; *Brit. Fl.* (former editions).

Dry pastures and road-sides, frequent. ☉. 6, 7.—We entertain many doubts whether this and the next are essentially distinct, or even if the characters assigned are constant: the pedicels certainly vary considerably in length, being sometimes so short that the flowers may be almost called sessile, sometimes almost as long as the tube of the calyx. In this and the last we follow Mr. Bentham as to the specific names, he having paid more attention to this genus, and indeed to the whole order of Leguminosæ, than any other botanist.

20. *T. filiforme* L. (*slender yellow T.*); heads on capillary peduncles of 2—6 lax racemed flowers, pedicels longer than the tube of the calyx, upper calycine teeth half the length of the lower ones, standard even deeply notched as narrow as and not covering the ripe legume, leaf-stalks scarcely the length of the stipules, leaflets obcordate equally stalked, stem glabrous. *E. B.* t. 1257. *T. micranthum* *Viv.*

Dry pastures chiefly near the sea. ☉. 6, 7.

10. *Lórus* Linn. Bird's-foot Trefoil.

Cal. 5-toothed; teeth nearly equal *Keel* ascending, much acuminate. *Legume* cylindrical, somewhat spongy within, and imperfectly many-celled.—Flowers *umbellate*: peduncles *bearing a leaf at their apex*. Leaves *trifoliate*.—Name: supposed to be one of the three kinds (the *herbaceous*) of the *λωτός* of the Greeks.

1. *L. corniculatus* L. (*common B.*); heads depressed umbellate 5—10-flowered, peduncles very long, calyx-teeth of the flower-bud straight, the two upper ones always converging, claw of the standard obovate and inflated above, stems decumbent.—*a. vulgaris*; leaves obovate nearly glabrous.—(*a*) everywhere glabrous or nearly so, leaflets thin. *L. corniculatus* *L.*: *E. B.* t. 2090.—(*b*) leaflets thick fleshy.—*β. villosus*; leaves obovate and as well as the stem and calyx clothed with very long spreading hairs.—*γ. tenuifolius*; leaflets narrow lanceolate or linear-obovate. *L. tenuis* *Kit.*: *E. B. S.* t. 2615.

a. Pastures everywhere, abundant, the second form near the sea.—*β.* rare. Higham, Kent; Budleigh Salterton; Sandgate.—*γ.* not very common. 4. 7, 8.—The two upper *calycine teeth* con-

verge with a rounded sinus between them: in the next they diverge forming an acute angle.

2. *L. mājor* Scop. (*narrow-leaved B.*); heads depressed umbellate 8—12-flowered, peduncles very long, calycine teeth subulate from an angular base always spreading, the two upper ones diverging, claw of the standard linear, leaflets obovate, stems nearly erect tubular. *E. B. t.* 2091.

Sides of ditches and moist bushy places, by no means unfrequent. 4. 7, 8.—The place of growth of this plant, in moister situations than *L. corniculatus*, consequently inducing a greater development of every part, is, in itself, almost sufficient to account for the trifling variations which distinguish it from that well-known species, to which it has been united by Mr. Bentham. It is sometimes nearly glabrous, but usually hairy; and a very hairy state has been gathered in Ireland.

3. *L. angustissimus* L. (*slender B.*); villous, heads 1—4-flowered, peduncles scarcely twice as long as the leaves, leaflets ovate-lanceolate, calyx-teeth straight in the bud as long as the tube or longer, stems procumbent, legumes slender.—*α. minor*; heads 1—2-flowered, legumes about 6 times longer than the calyx often 20-seeded. *L. diffusus* *E. B. t.* 925.—*β. mājor*; heads 2—4-flowered, legumes rugose shorter and broader about 2—3 times the length of the calyx about 12-seeded. *L. hispidus* Desf.: *E. B. S. t.* 2823.

South of England, very rare.—*α.* Castle rock at Hastings, Sussex; at Kingsteignton and Bishopsteignton, Devon: Stokes Bay, near Gosport, Hants. Strand, near Passage, Ireland. Jersey.—*β.* Cornwall, near the Lizard and Penzance; Devonshire. ☉. 6—8.—*Flowers* much smaller, and aspect very different from any of the preceding. The more luxuriant the specimens are, the thicker and shorter is the legume: in this respect our British specimens of the *var. β.* accord better with *L. hispidus* Desf. as originally described from cultivated plants, than do wild ones from the south of Europe. Sometimes *var. α.* has the *legume* only $\frac{1}{2}$ a line thick and 12 lines long, and *β.* a line thick and only 6 lines long; but numerous intermediate states may be observed. The characters usually derived from the relative length of the *calyx-tube* and teeth, the length of the *peduncles*, the beak of the *legumes*, and the shape of the *leaflets* and *stipules*, only apply to British specimens, and are quite insufficient to separate foreign ones of these two varieties.

Tribe III. ASTRAGALEÆ. *Legume spuriously and longitudinally 1- or 2-celled, by the introflexion of one of the sutures. Stamens diadelphous (9 and 1). Stems herbaceous, or somewhat shrubby. Leaves pinnate. (Gen. 11, 12.)*

11. OXYTROPIS *De Cand.* *Oxytropis.*

Keel with a narrow point. *Legume* tumid 2-celled (more or

less perfectly); *cells* formed by the inflexed margins of the upper suture.—Named from *οξύς*, *sharp*, and *τροπή*, a *heel*; one of the essential characters of this genus, as distinguishing it from the following.

1. *O. Uralénsis* DC. (*hairy Mountain O.*); stemless, leaflets about 12 pairs ovate acute densely clothed with silvery hairs, scape erect longer than the leaves with spreading hairs, legumes erect ovate-cylindrical silky with a recurved point, style persistent. *Astragalus* L.: *E. B.* t. 466. Ox. Halleri *Bunge* (not *Vill.*).

Dry pastures in Scotland, chiefly near the sea. Queensferry; Montrose; Mull of Galloway; Argyle; Ross; Sutherland. 4. 6, 7.—A very beautiful plant, clothed with silky hairs, especially on the young leaves. *Leaflets* 8—12 pairs, on foreign specimens sometimes 20 pairs, with an odd one, ovate, oblong or narrow-lanceolate, acute. *Scape*, when in fr., 4—6 inches high. *Flowers* bright purple, capitate, somewhat spreading. *Legumes* sometimes 2-celled, sometimes only divided to the middle, in the same plant. We cannot distinguish the European from the Siberian plant.

2. *O. campestris* DC. (*yellowish Mountain O.*); stems very short procumbent, leaflets about 12 pairs elliptic lanceolate sprinkled with shining hairs, peduncles ascending about the same length as the leaves, legumes erect ovate inflated pubescent semibilocular. *Astragalus* L.: *E. B.* t. 2522. *A. sordidus Willd.*

Rocks facing the south, a little to the north of Bradoony, in the Clova mountains. 4. 7.—*Flowers* capitate, yellowish, tinged with purple. The Scotch plant belongs to the variety or species called *O. sordida*, but we perceive no essential difference between this and *O. campestris*.

12. ASTRÁGALUS Linn. Milk-vetch.

Keel obtuse. *Legume* 2-celled (more or less perfectly); *cells* formed by the inflexed margins of the lower suture.—*Αστραγάλος*, one of the bones of the heel, is the Greek name for one of the species, in allusion to the knotted root of that individual plant to which it was formerly applied.

1. *A. glycyphýllus* L. (*sweet M.*); stem prostrate, spikes ovate, leaves longer than the peduncles, leaflets oval, stipules ovate-lanceolate free, legumes somewhat triangular linear curved sessile erect glabrous. *E. B.* t. 203.

Woods and thickets, in a gravelly or calcareous soil. Rare in Scotland; about Edinburgh, Queensferry, and Arbroath. 4. 6—9.—Well distinguished by its large size. *Stem* prostrate, 2—3 ft. long. *Leaves* with large ovate acute stipules, which are free from each other and from the petiole. *Flowers* dingy yellow. *Legumes* an inch or more in length, curved.

2. *A. hypoglóttis* L. (*purple Mountain M.*); stem prostrate, spikes ovate, leaflets slightly emarginate, stipules united, peduncles longer than the leaves, legumes ovate stipitate erect capitate hairy 2-seeded. *E. B. t.* 274.

Dry gravelly or chalky pastures; chiefly in the east of England and Scotland, as far north as Blair-Athole. Isles of Arran, Ireland. 4. 6, 7.—*Stem* weak, a few inches in length. *Leaflets* elliptic-ovate, retuse, hairy. *Stipules* united together, but free from the petiole. *Peduncles* longer than the leaves, curved upwards. *Heads of flowers* large in proportion to the size of the plant, bluish-purple, sometimes white. *Legumes* ovate, acuminate, hairy, stalked within the calyx.

3. *A. alpinus* L. (*alpine M.*); pubescent, stem ascending, spikes capitate, leaflets elliptical, stipules ovate free, peduncles the length of the leaves, legumes elliptical pointed at both ends stipitate pendulous racemose clothed with black hairs 2—3-seeded. *E. B. S. t.* 2717. *Phaca astragalina* DC. and others.

Head of Glen Dole, Clova; and Little Craigindal, Bracmar. 4. 7.—*Stem* slender, much and diffusely branched. *Racemes* of few, spreading or drooping *flowers*, white, tipped with purple.

Tribc IV. HEDYSAREÆ. *Stamens diadelphous* (9 and 1). *Legume separating transversely into one or more 1-seeded joints or cells, but otherwise indehiscent. Leaves pinnate with an odd one without tendrils.* (Gen. 13—16.)

13. ORNÍTHOPUS Linn. Bird's-Foot.

Cal. elongated, tubular. *Keel* very small, obtuse. *Legume* compressed, curved, of many close single-seeded joints, whose sides are equal.—*Flowers capitate*; peduncles bearing a leaf at their apex—Name: *ορνις*, *ορνιθος*, a bird, and *πους*, a foot; from the similarity of the seed-vessel to a bird's-foot.

1. *O. perpusillus* L. (*common B.*); leaves pinnate with 6—9 pairs of leaflets and a terminal one, peduncles longer than the leaves, flowers nearly sessile, legumes curved upwards with a beak scarcely longer than the upper joint. *E. B. t.* 369.

Sandy and dry gravelly soil; not unfrequent in Scotland. ☉. 5—7.—*Stems* 2—12 inches long, much branched at the base and spreading, sometimes ascending when short. *Leaflets* oval. *Flowers* white with red lines.

14. ARTHROLÓBIUM Desv. Joint-vetch.

Cal. elongated, tubular. *Keel* very small, obtuse. *Legume* cylindrical, curved of many close single-seeded joints, whose sides are equal.—*Flowers capitate*; peduncles naked at the apex.—Name: *αρθρος*, a joint, and *λοβος*, a pod; from the jointed character of the seed-vessel.

1. *A. ebracteatum* DC. (*Sand J.*); stem filiform, peduncle about equal to the leaves 2—4-flowered, stipules very minute, leaves pinnate with many pairs of equal elliptic-oblong leaflets, the lower ones remote from the stem. *E. B. S. t.* 2844.

Sandy ground near Grand Havre, Guernsey, but rare; Alderney; Scilly. ☉. 6—8.

15. HIPPOCRÉPIS Linn. Horse-shoe Vetch.

Cal. campanulate. *Keel* about as long as the wings, acuminate. *Legume* compressed, submembranaceous, of numerous joints, which are curved like a horse-shoe, so that each legume has many notches on one side. — Flowers *umbellate, axillary and nearly sessile*. — Name: *ἵππος*, a horse, and *κρηπίς*, a shoe; from the form of the notches of the fruit.

1. *H. comosa* L. (*tufted H.*); caespitose, perennial, peduncles longer than the leaves, flowers 5—8 umbellate, legumes curved scabrous with glabrous joints and semicircular notches. *E. B. t.* 31.

Chalky and limestone banks and pastures, plentiful in the chalky counties of England. Near Ayr, Scotland. *ϗ.* 5—8. — *Stems* 4—6 inches high, much branched and woody at the base. *Leaflets* 4—6 pairs, with an odd one, obovate-elliptical. *Peduncles* long. *Flowers* pale yellow, much resembling those of *Lotus corniculatus*; but the *legume* is quite different, and very remarkable: its notches are about twice as broad as deep, whereas, in the foreign *H. glauca*, they are much wider.

16. ONÓBRYCHIS Tourn. Saint-foin.

Keel truncate, longer than the wings. *Legume* sessile, of one indehiscent joint, compressed, coriaceous, prickly, crested or winged. — Flowers *racemose*. — Name: *ovos*, an ass, and *βρυχω*, to bray; from that animal braying in order to get at it.

1. *O. sativa* Lam. (*common S.*); leaves pinnate nearly glabrous, legumes toothed on the lower margin with elevated wrinkles on the sides, wings of the corolla as short as the calyx, the keel as long as the standard, stem elongated. *Hedysarum Onobrychis* L.: *E. B. t.* 96.

Dry chalky hills and open downs, in various parts of England. *ϗ.* 6, 7. — A plant cultivated to great advantage in dry, and especially chalky, soils.

Tribe V. VICIÆ. *Stamens* diadelphous (9 and 1). *Legume* 1-celled, 2-valved, several-seeded, the suture not introflexed. *Cotyledons* thick, farinaceous. *Leaves* pinnate, with the common petiole not articulated upon the stem, and ending in a tendril,

bristle, or leaflet; sometimes wanting, but with a tendril or leaf-like petiole. (Gen. 17, 18.)

17. *Vicia* Linn. Vetch. Tare.

Style filiform, with its upper part hairy all round, or with a tuft of hair beneath the *stigma*.—Leaves usually with tendrils.—Name originally derived, according to Théis, from *gwig*, Celtic; whence also *wichen* in German, *βικιον* in Greek, *vesce* in French, and *vetch* in English.

* *Peduncles* short, axillary, few-flowered. *Calyx* equal at the base. *Styles* with a dense tuft of hairs beneath the *stigma*. *Cybospermum*.

1. *V. lathyroides* L. (*Spring V.*); flowers sessile solitary, leaflets 2—6 lower ones retuse, stipules entire not impressed with a spot, calyx-teeth subulate, standard glabrous, legumes linear glabrous, seeds nearly cubical tubercled. *E. B.* t. 30.

Road-sides and dry pastures, not unfrequent. ☉. 4—6.—Much resembling a starved state of *V. sativa*, or especially *V. angustifolia*; from both of which it may be known by its calyx with narrower teeth and not gibbous at the base, the smaller, more purple flower, scarcely so large as the leaflets, with a less reflexed vexillum, and by the rough or dotted seeds. Here, too, the leaflets are fewer on a petiole, the tendril is simple, the stem procumbent.

** *Peduncles* short, few-flowered. *Calyx* gibbous at the base on one side. *Style* with a dense tuft of hairs beneath the *stigma*. *Euvicia*.

2. *V. sativa* L. (*common V.*); flowers 1—2 axillary nearly sessile, leaflets 6—10 lower ones retuse or obcordate upper ones often narrower or linear, stipules toothed with a more or less evident spot, calyx-teeth nearly equal, lanceolate-subulate, standard glabrous, legumes linear pubescent or rarely glabrous, seeds globose smooth.—*α. sativa*; upper leaflets elliptic-oblong, flowers usually in pairs, pods erect. *E. B.* t. 334. *V. lævigata* Sm. ? *E. B.* t. 483.—*β. angustifolia*; upper leaflets narrower, flowers usually solitary, pods spreading. *V. angustifolia* Roth: *E. B. S.* t. 2614. *V. Bobartii* Forst.: *E. B. S.* t. 2708.

α. Cultivated ground, frequent.—*β.* Dry pastures in a sandy or gravelly soil. ☉ or ♂. 5, 6.—Flowers purple and blue or red particularly in the small varieties. Hilum of the seed long, linear. Our var. *α.* we have nowhere seen in a perfectly wild state; it is that commonly cultivated. The *β.* has smaller flowers; it is supposed by some to include two species, but by cultivating *V. Bobartii*, we observed it pass into *V. angustifolia*. *V. lævigata* Sm. has been long involved in doubt, having only occurred on the pebbly shore of Weymouth, Dorsetshire, where it was found by the Rev. Mr. Baker, about 70 years ago, but from which it has long since disappeared. Mr. Bentham pronounces it to be merely *V. sativa*, from which,

according to Smith's description, it differed by the reflexed and quite glabrous legumes, very smooth leaves, stipules unstained, and a perennial root. The smoothness of the entire plant is readily explained by proximity to the sea; but the characters are those of *V. lutea*, which grows at the same place: it is therefore not improbable that both species may have been kept in view, especially as the flowers have been said to be sometimes yellow.

3. *V. sépium* L. (*Bush V.*); racemes 4—6-flowered nearly sessile, calyx-teeth unequal, legumes upright glabrous, leaflets 4—8 pairs ovate obtuse gradually smaller upwards upon the petiole. *E. B. t.* 1515.

Woods and shady places, frequent. 4. 6—8.—*Stem* 1—2 ft. high. *Leaflets* large. *Standard* glabrous. *Hilum* of seed long, linear.

4. *V. lútea* L. (*rough-podded yellow V.*); flowers sessile solitary, calyx-teeth unequal, standard glabrous, legumes reflexed hairy, stems diffuse, leaflets obtuse or acute, stipules coloured upper ones ovate. *E. B. t.* 481.

Rocky or stony ground especially near the sea. Cornwall, Suffolk, Sussex, Derbyshire. On Glastonbury Tor-hill. Weymouth. Mearns-shire; between Montrose and Arbroath; hills at Queensferry; Dunure Castle, Ayrshire, abundant. 4. 6—8.—*Stems* 6—12 inches high, weak. *Leaflets* elliptical-lanceolate, hairy beneath and at the edges, 6—9 pairs on a petiole. *Flowers* large, yellow. *Legumes* compressed. *Seeds* with a short *hilum* in this and *V. hybrida*. The stipules in this and the next species do not seem to differ in form; they are hastate about the middle of the plant, but become ovate upwards by the smallness of the lateral lobes.

5. *V. *hybrida* L. (*hairy-flowered yellow V.*); flowers nearly sessile solitary, calyx-teeth unequal spreading, standard hairy, legumes reflexed hairy, stems ascending, leaflets abrupt, stipules unstained upper ones ovate. *E. B. t.* 482.

On Glastonbury Tor-hill. Swan Pool near Lincoln. 4. 6, 7.—*Flowers* yellow, reddish externally. Similar to the last, but distinguished by its hairy *standard*. The first of the above stations is mentioned by Ray; but Ray considered his plant to be *V. lutea*, which species was found there in 1799 by the late Mr. Dawson Turner, when in search of *V. hybrida* but in vain. The second locality depends on Mr. Nicholson, as mentioned in the Brit. Fl. ed. 3rd, p. 326. The species, even if no mistake occurred, may have been introduced by ballast, and have afterwards died out or been eradicated, as it no longer appears to be found in this country.

*** *Peduncles* elongated, few-flowered. *Calyx* gibbous at the base. *Style* with a tuft of hairs beneath the stigma. *Aracus*.

6. *V. Bithýnica* L. (*rough-podded purple V.*); peduncles rather shorter than the leaves 1- or rarely 2-flowered, legumes

upright rough, upper petioles with two pairs of lanceolate leaflets, stipules toothed. *E. B.* t. 1842.

Bushy places in gravelly soil, mostly near the sea, but rare. Southern counties of England; also Essex, Worcester, Gloucester, and Wales. γ . 7, 8.—*Flowers* purple, all but the wings, which are whitish. *Leaflets* varying much in breadth, sometimes elliptic-lanceolate, sometimes nearly linear: there is generally but one pair on the lowest petioles.

**** *Peduncles elongated, many-flowered. Calyx gibbous at the base. Cracca.*

7. *V. Cracca* L. (*tufted V.*); peduncles many-flowered longer than the leaves, flowers imbricated, leaflets lanceolate slightly hairy with tendrils, stipules half-arrow-shaped nearly entire. *E. B.* t. 1168.

Bushy places. γ . 6—8.—*Stem* 2—3 ft. high. *Flowers* numerous, crowded, drooping and imbricated, of a fine bluish-purple. *Style* hairy all round in the upper part; hairs rather longer on the under side below the stigma, but scarcely forming a tuft, as in the true *Vicia*.

8. *V. O'robos* DC. (*Wood bitter V.*); leaves pinnate hairy with 7—10 pairs of ovate-oblong acute leaflets without tendrils, stipules half-arrow-shaped slightly toothed at the base, peduncles many-flowered at length longer than the leaves, stem branched decumbent hairy. *Orobos sylvaticus* L.: *E. B.* t. 518.

Rocky and mountainous woods and thickets in the north. γ . 5, 6.—*Flowers* purplish-white in unilateral racemes. *Style* filiform, equally pubescent all round its upper part.

9. *V. sylvatica* L. (*Wood V.*); peduncles many-flowered longer than the leaves, leaflets elliptic-oblong mucronate, stipules lunate deeply toothed at their base, tendrils branched. *E. B.* t. 79.

Bushy places in mountainous countries, in Scotland, the north and north-west of England, Wales, and Ireland. It has been found near Newmarket; and in Oxfordshire, and Kent. γ . 6—8.—*Stems* 3—6 ft. high, climbing by means of its branching tendrils. *Leaflets* 6—8 or 10 pairs. *Flowers* very beautiful, numerous, white, streaked with bluish veins. *Style* equally pubescent all round towards the stigma.

***** *Peduncles elongated, few-flowered. Style equally pubescent all round. Calyx equal at the base. Annual plants. Ervum.*

10. *V. tetrasperma* Moench. (*slender T.*); leaflets 3—6 pairs linear obtuse or acute, peduncles 1—7-flowered, legumes oblong-linear glabrous 4—8-seeded.— α . leaflets 4—6 pairs oblong linear obtuse mucronate, tendrils usually branched, peduncles

pointless or with a soft point as long as the leaves 1—3-flowered, legumes 4—6-seeded. *Ervum* *L.*: *E. B.* t. 1223. — β . leaflets 3—4 pairs narrow linear acute, tendrils simple, peduncles aristate at length about twice as long as the leaves 1—7-flowered, legumes 5—7-seeded. *V. gracilis* *Lois.*: *E. B. S.* t. 2904. *Ervum* *DC.*

Cornfields, hedges, &c.—*a.* not uncommon in England; more rare in Scotland, as at St. David's, Fifeshire; Ruthven, near Perth; Arbroath, and in Lanarkshire and Kirkcudbrightshire.— β . Cobham, Kent; Bath; Isle of Wight. County of Kerry, Ireland. \odot . 6—8. — *Stipules* semi-sagittate, entire. Teeth of the *calyx* elongated from a triangular base, shorter than the tube, the two upper ones diverging. Standard of *corolla* in *var. a.* with blue streaks, in β . usually without them. *Seeds* globose, with an oblong or oval *hilum*. The chief difference between the two vars. is in the larger flowers of *var. \beta*., its narrower and fewer leaflets, the latter causing the leaves to be shorter than the fruit-bearing peduncle; but there seem to be many intermediate forms.

11. *V. hirsúta* Koch (*hairy V.*); leaflets 6—8 pairs linear-oblong truncate, peduncles 1—6-flowered, legumes oblong 2-seeded hairy. *Ervum* *L.*: *E. B.* t. 970.

Corn-fields and hedges; too frequent. \odot . 6—8.—*Stems* 2—3 ft. long, weak, straggling and climbing. *Stipules* semi-sagittate, the lower lobe usually cleft into several setaceous segments. *Flowers* very insignificant, pale blue. Teeth of the *calyx* subulate, longer than the tube, the two upper converging. *Seeds* orbicular slightly compressed, with a long linear *hilum*.

18. *LÁTHYRUS* *Linn.* Vetchling. Everlasting-Pea. Bitter-vetch.

Cal. with its mouth oblique, its upper segments shortest. *Style* flattened below the *stigma*, downy on the upper side.—*Leaves* with or without tendrils; leaflets sometimes wanting.—*Name*: *λαθυρος*, a leguminose plant of Theophrastus.

* *Leaflets wanting.*

1. *L. A'phaca* *L.* (*yellow V.*); peduncles single-flowered, tendrils without leaves, stipules very large foliaceous cordate-sagittate. *E. B.* t. 1167.

Borders of sandy and gravelly fields, in England, rare. Norfolk, Warwick, and Gloucestershire, and the counties to the south of these. \odot . 5—8.—*True leaves*, each consisting of a single pair of *leaflets*, are rare, and only exist on this singular plant in the youngest state. *Flowers* yellow.

2. *L. Nissólia* *L.* (*crimson V. or Grass-Vetch*); leaflets wanting but in place of them a simple linear-lanceolate sessile leaf-like petiole without tendrils, stipules minute subulate. *E. B.* t. 112.

Bushy places, and grassy borders of fields, in England, but scarcely further north than Derbyshire. ☉. 5, 6.

• ** *Leaflets one pair.*

3. *L. hirsútus* L. (*rough-podded V.*); peduncles 2-flowered, legumes hairy, seeds tubercled, each tendril with a pair of linear-lanceolate leaflets, stem and petiole winged. *E. B. t.* 1255.

Cultivated fields, rare: Essex; between Bath and Bristol. ☉. 6, 7.—*Flowers* pale, except the *standard*, which is bright crimson.

4. *L. praténsis* L. (*Meadow V.*); peduncles many-flowered, legumes obliquely veined, seeds smooth, tendrils with 2 lanceolate 3-nerved leaflets, stipules arrow-shaped as large as the leaflets, calyx-teeth subulate, stem acutely angled without wings. *E. B. t.* 670.

Moist meadows and pastures, frequent. 4. 7, 8.—*Stems* 2—3 ft. long, climbing. *Flowers* yellow. *Legumes* obliquely veined. *Seeds* globose, with a small oblong *hilum*.—Cattle are said to be very fond of this common plant.

5. *L. sylvéstris* L. (*narrow-leaved E.*); peduncles many-flowered, legumes reticulated with veins, seeds smooth, tendrils with a pair of ensiform leaflets, calyx-teeth triangular-subulate, stipules semi-sagittate narrow, stem winged. *E. B. t.* 805.

Thickets and hedges, in the middle and south of England. North Wales. Shore near Whitehaven. Kirkcudbrightshire; and banks of the White Adder, Berwickshire, doubtfully wild. Salisbury Craigs, and coast of Angushire, certainly not indigenous. 4. 7—9.—*Stem* 5—6 ft. long, broadly winged. *Flowers* large, greenish, with purple veins. *Seeds* compressed, with a long *hilum* half surrounding them.

6. *L. *latifólius* L. (*broad-leaved E.*); peduncles many-flowered, legumes reticulated with veins, seeds tubercled, tendrils with 2 ovate-elliptical mucronate leaflets, stipules semi-sagittate triangular-ovate broad, stem winged. *E. B. t.* 1108.

Woods, rare, and perhaps always the outcast of gardens. Cambridgeshire, Cumberland, Worcestershire, Bedfordshire, Gloucestershire. Near Kirkcudbright, Scotland. 4. 7, 8.—A well-known climber, and a great ornament of cottage gardens. Resembling the last, but with *leaves* much broader, *flowers* larger and more purple, and *seeds* tubercled and wrinkled. Mr. Bentham considers it a broad-leaved variety (from Southern Europe).

*** *Leaflets two or more pairs. Petiole ending in a simple or branched tendril.*

7. *L. palústris* L. (*blue Marsh V.*); peduncles 3—6-flowered,

tendrils with 2—4 pairs of linear-lanceolate acute leaflets, stipules half-arrow-shaped lanceolate, stem winged. *E. B.* t. 169.

Boggy meadows and thickets in several parts of England; near London; in Berkshire, Leicestershire, Derbyshire, Lancashire, Yorkshire, Hampshire, Suffolk, Cambridgeshire, and Norfolk. North and South Wales Galloway, Scotland. γ . 6—8.—*Stem* 2—3 ft. high, climbing. *Leaflets* about 2 inches long. *Flowers* bluish-purple.

8. *L. maritimus* Big. (*Sea-side E.*); peduncles many-flowered shorter than the leaves, tendrils with 3—4 pairs of oval leaflets, stipules as large as the leaflets unequally cordato-hastate with the angles acute, stem angled without wings. *Pisum L.*: *E. B.* t. 1046.— α . compact robust, leaflets obovate-elliptical obtuse on a recurved common petiole. — β . straggling, slender, leaflets elliptical-lanceolate acute, common petiole straight.

Pebbly beach of Lincolnshire, Suffolk, and the south coast of England. Kerry, Ireland. — β . Burra firth, Unst, Shetland. γ . 7, 8. —The *style* of this plant is as in *Lathyrus*, to which Bigelow has removed it. The *var. \beta*, brought by Dr. M'Nab from Shetland in 1837, in its slender straggling habit and narrow leaves comes very near the *L. Altaicus* Ledeb., but that has much smaller stipules and cylindrical legumes. The same form is found in Iceland and Arctic America.

**** *Leaflets two or more pairs. Petiole without tendrils. Orobus L.*

9. *L. macrorhizus* Wimm. (*tuberous B.*); leaflets 2—4 pairs glaucous beneath, stipules half-arrow-shaped toothed at the base, stem simple erect winged.— α . leaflets oblong or lanceolate, apiculate. *Orobus tuberosus L.*: *E. B.* t. 1153; *Brit. Fl.* (former edit.). — β . leaflets linear. *O. tenuifolius Roth.*

Mountain thickets, frequent.— β . Kinnaird, near Brechin; Moy Woods, Inverness-shire; near Elgin. Devon, Cornwall. New Forest, Hants. Ashdown Forest, Sussex. γ . 5—7.—*Roots* tuberous, eaten by the Highlanders, under the name of *Cairmeil* (supposed to be the *chara* of Cæsar, *Bell. Civ.* iii. 48.), a very small quantity being said to allay or prevent hunger. *Stem* 1 ft. high. *Flowers* in long-stalked axillary racemes, purple, veined. *Legume* long, pendulous, cylindrical, black. *Seeds* globose.

10. *L. niger* Wimm. (*black B.*); leaflets 3—6 pairs ovate or elliptical, stipules linear-lanceolate acute, stem branched angular erect. *Orobus L.*: *E. B. S.* t. 2788; *Brit. Fl.* (former edit.).

Shaded rocks, Scotland. Den of Airly, Forfarshire. Pass of Killiecrankie, Perthshire. Craiganain, a rock within 2 miles of Moy House, Inverness-shire. γ . 6, 7.—Turns black when drying. *Stem* not winged. Lower *stipules* half-arrow-shaped, upper ones almost subulate. *Seeds* oval. As the genus *Orobus* of Linnaeus differs solely from *Lathyrus* by the presence of a short fine point to the petiole in place of tendrils, both structures being morphologically the same, we

follow the prevailing custom of uniting the two, although the division be a natural as well as convenient one to the student.

ORD. XXVII. ROSACEÆ Juss.

Calyx 4—5-lobed, free, or adherent with the ovary. *Petals* 5, perigynous, equal. *Stamens* perigynous, definite or indefinite, with an incurved æstivation; *anthers* 2-celled, bursting longitudinally. *Carpels* many, rarely solitary, and then situated between two of the lobes of the calyx (when these are 5), 1-celled, 1—2 or more seeded, free, or combined with each other and with the calyx. *Styles* simple, often lateral, distinct or combined. *Seeds* ascending or suspended, nearly without albumen: *embryo* straight, with fleshy or foliaceous cotyledons.—Herbs, or Shrubs, or Trees. Leaves *alternate*, with stipules *one on each side the base of the petiole*.—The pulpy fleshy fruits are esculent; while the plants which produce them are often poisonous from the presence of Prussic acid, with which many of the species abound. Laurel-water is extracted, not from a true Laurel, but from an individual of this Natural Order, *Prunus Lauro-Cerasus*: the *Bitter-Almond* owes its flavour to that acid. Some produce a gum; others are astringent. Roots of *Tormentil* yield a dye; others are febrifuges. The qualities residing in the species of this Order entitle it to a high rank among British Vegetables.

Sub-Ord. I. AMYGDALÆÆ. *Carpel* solitary, superior. *Style* 1. *Calyx-tube* deciduous. *Stipules* free.

1. PRUNUS.

Sub-Ord. II. ROSEÆ. *Carpels* not adhering to the calyx-tube. *Stipules* united to the petiole.

Tribe 1. SPIRÆIDÆ. *Petals* several. *Fruit* a ring of follicles not inclosed within the calyx tube.

2. SPIRÆA.

Tribe 2. POTENTILLIDÆ. *Calyx-tube* short and nearly flat, not enclosing the fruit. *Petals* several. *Achenes* or *drupes* 5 or more upon a common flat or convex receptacle.

* *Achenes* tipped with a long awn (the permanent style).

3. DRYAS. Awns feathery, not jointed. Receptacle flat.

4. GEUM. Awns jointed. Receptacle elongated.

** *Achenes* or *drupes* with a short style.

5. RUBUS. Drupes. Calyx simple (without external bracteoles).

6. FRAGARIA. Achenes on a large fleshy deciduous receptacle. Calyx double (i. e. with as many external bracteoles at its summit as divisions, and alternate with them).

7. COMARUM. Achenes on a spongy permanent receptacle. Calyx double. Petals smaller than the calyx.

8. *POTENTILLA*. Achenes numerous, on a dry flat receptacle. Calyx double.
 9. *SIBBALDIA*. Achenes 5—10, on a minute dry receptacle. Calyx double.

Tribe 3. *SANGUISORBIÐÆ*. *Achenes 1—2, enclosed within the dry calyx-tube.*

* *Style from near the base of the achene.*

10. *ALCHEMILLA*. Petals 0. Calyx double (8-cleft). Stamens 1—4.

** *Style terminal.*

11. *SANGUISORBA*. Petals 0. Calyx single (4-cleft), with 2—3 external bracteoles at its base. Stamens 4. Stigma capitate.
 12. *POTERIUM*. Petals 0. Calyx single (4-cleft). Flowers usually monœcious. Stamens many. Stigma tufted.
 13. *AGRIMONIA*. Petals 5. Calyx single (5-cleft), without external bracteoles.

Tribe 4. *ROSIDÆ*. *Petals 5. Achenes numerous, enclosed within the fleshy calyx-tube, which is contracted at the orifice.*

14. *ROSA*.

Sub-Ord. III. *POMEÆ*. *Petals several. Carpels united and adhering by their back to the calyx-tube, thus resembling an inferior fruit. Stipules free.*

15. *MESPILUS*. Calyx-segments large, foliaceous. Petals large, roundish.
 16. *CRATÆGUS*. Calyx-segments small. Petals large, roundish. Cells of fruit bony.
 17. *COTONEASTER*. Calyx-segments small. Petals small, erect.
 18. *PYRUS*. Calyx-segments small. Petals large, roundish. Cells of fruit cartilaginous.

SUB-ORD. I. *AMYGDALÆÆ*. *Cal. inferior, deciduous. Ovary solitary, superior. Style 1, terminal. Fruit a solitary drupe, with one or two seeds suspended from the top of their cell. Trees or shrubs with simple leaves and stipules free from the petiole. All the parts abound in Prussic acid. (Gen. 1.)*

1. *PRÚNUS* Linn. Plum and Cherry.

Cal. 5-cleft. Pet. 5. Nut of the drupe smooth, or furrowed at the margin.—Named *προυνή* in Greek, according to Theophrastus.

* *Flowers 1 or 2 together, on short pedicels. Fruit covered with bloom. Young leaves convolute. PRUNUS DC.*

1. *P. comúnis* Huds. (*common P.*); pedicels solitary or in pairs, leaves elliptic or ovate-lanceolate somewhat downy beneath especially when young.—*α. spinosa*; pedicels glabrous, leaves at length glabrous, branches spinous. *P. spinosa* L.: *E. B. t. 842.*—*β. insititia*; pedicels and under side of the leaves pubescent, branches slightly spinous. *P. insititia* L.:

E. B. t. 841. — γ . *doméstica*; pedicels glabrous, leaves at length glabrous beneath except sometimes the midrib, branches unarmed. *P. domestica L. : E. B. t. 1783.*

Hedges, coppices, and woods. — γ . perhaps truly wild at Twineham, Sussex; and Isle of Wight. *h. 4, 5.* — Hudson and Smith were of opinion that *var. β .* and γ . are forms of the same plant, and we are satisfied that the first of these cannot be satisfactorily distinguished from *P. spinosa*. Dr. Bromfield also observed that in Hampshire *P. spinosa* is linked to the other two "by such imperceptible and evanescent degrees of affinity, as to defy any specific formula that can be framed to distinguish them." *P. spinosa* has in general much more spinous and crooked branches, and smaller leaves; and the flowers are usually solitary and past before the leaves appear. *P. insititia* has often scarcely any spine, and then can only be distinguished by the rather more pubescent leaves. In *a.*, or the *Sloe*, the fruit is small, globose, and very austere; in β ., or the *Bullace-tree*, it is larger; and in γ . it is often longer than broad.

** *Pedicels elongated or racemose. Fruit without bloom. Young leaves conduplicate. CERASUS DC.*

2. *P. Avium L. (wild C. or Gean)*, flowers in nearly sessile lax umbels, calyx-tube pyriform, the segments entire somewhat pointed, leaves drooping ovate-lanceolate. *P. Cerasus Sm. in E. B. t. 706.*

Woods and hedges. *h. 5.* — A tree. *Flower-buds* not leafy. The stone of the *drupe* adheres to the flesh in this species; in the next it separates readily. — The origin of the common garden *Cherry*.

3. *P. Cérasus L. (Morello C.)*; flowers in nearly sessile umbels, calyx-tube turbinate the segments crenato-serrate blunt, leaves not drooping oblong-obovate or broadly ovate-lanceolate. *E. B. S. t. 2863. P. austera Ehrh.*

Woods and hedges, in various places in England. *h. 5.* — A bushy plant, 6—8 ft. high, throwing out underground shoots or stems resembling creeping roots, to a considerable distance. *Leaves* erect or horizontal, never drooping, "possessing a firmness and opacity quite wanting in the foliage of the last species." *Bromf.* Inner scales of the *flower-buds* leafy. — This is the origin of the Morello cherry, but whether truly distinct from the preceding is to us doubtful. Assuredly in cultivation several of the differences usually assigned disappear, such as the pubescence of the leaf; and as to the leafy nature of the flower-buds, unless the upper figure in *E. B. t. 706.* be also taken from the present species, it seems sometimes alike in both.

4. *P. Pádus L. (Bird-Cherry)*; flowers in pendulous racemes, leaves deciduous obovate or oval glabrous with two glands at the summit of the foot-stalk. *E. B. t. 1383.*

Woods and coppices, frequent, especially in the north. *h. 5.* —

A small tree, with acute, doubly serrate leaves. Flowers white. Drupes small, black; nut rugose.

SUB-ORD. II. ROSEÆ. *Calyx inferior, more or less permanent. Carpels free from the calyx-tube or merely seated upon it. Stipules adhering to the petiole.* (Gen. 2—14.)

Tribe I. SPIRÆIDÆ. *Petals 5. Follicles several, distinct or united, invested by the calyx. Seeds 1—6, suspended from the inner edges of the follicle. Shrubs or herbaceous plants.* (Gen. 2.)

2. SPIRÆ'A Linn. *Spiræa*, Dropwort, or Meadow-sweet.

Cal. inferior, equally 5-cleft, persistent. *Pet.* 5, roundish. *Follicles* 3—12, usually distinct, 1-celled, 2-valved, with few seeds.—Name: supposed to be the *σπειρία* of Theophrastus.

1. *S. salicifolia* L. (*Willow-leaved S.*); shrubby, leaves elliptic-lanceolate unequally serrate glabrous, racemes terminal compound. *E. B.* t. 1468.

Moist woods in several parts of the north of England and Scotland. *h.* 7.—A small branching shrub. Flowers rose-coloured, in crowded racemes. Stamens longer than the petals.

2. *S. Filipendula* L. (*common D.*); herbaceous, leaves interruptedly pinnate, all the leaflets uniform deeply cut and serrate, flowers paniculato-cymose, follicles hairy. *E. B.* t. 284.

Dry pastures, especially in a chalky or gravelly soil; rare in Scotland. *h.* 6, 7.—Root with rather long knobs. Stem a foot high, paniced above. Leaflets small, oblong or lanceolate, alternate ones not half their size. Stipules of the radical leaves linear, entire, of the stem rounded and cut or serrate. Flowers yellowish white, tipped with rose-colour.

3. *S. Ulmaria* L. (*Meadow-sweet*); herbaceous, leaves interruptedly pinnate serrate downy beneath, lateral leaflets undivided terminal one largest and lobed, flowers in compound (and as it were proliferous) cymes, follicles glabrous. *E. B.* t. 960.

Meadows and banks of ponds and ditches, frequent. *h.* 6—8.—Stems 3—4 ft. high, branched upward. Leaflets ovate, acuminate, very large, especially the terminal 3—5-lobed one; alternate ones minute. Flowers yellowish-white, numerous, sweet-scented. Fruit twisted.

Tribe II. POTENTILLIDÆ. *Fruit a collection of achenes or little drupes, upon a common flat or elevated receptacle. Calyx 4—5-cleft, frequently with little bracts near the summit alter-*

nating with the segments (or 8—10-cleft, the segments alternately smaller); the tube short nearly flat and not investing the fruit. Petals usually 4—5. Mostly herbaceous plants, sometimes shrubs. Leaves usually compound. (Gen. 3—9.)

* Ovule at a distance from the base of the style. Radicle inferior.

3. DRYAS Linn. Dryas.

Cal. 8—10-cleft, its segments equal. *Pet.* 5—8. *Styles* terminal. *Ovules* lateral. Achenes with long feathery not jointed awns. *Receptacle* flat. — Name: *δρυς*, the oak; from a distant similarity between their leaves.

1. *D. octopétala* L. (white *D.*, *Mountain Avens*); petals 8, leaves obtuse simple crenato-serrate. *E. B.* t. 451. *D. depressa* Bab. in *Ann. Nat. Hist.* x. t. 7.

Frequent in alpine parts of England, Scotland, and Ireland, especially on limestone; north coast of Sunderland, abundant. *4.* 6, 7. — *Stem* short, procumbent. *Leaves* ovate-elliptical, white and downy beneath, petioled. *Flowers* large, white. In a form found in the county of Clare, Ireland, the *calyx* is clothed with nearly black hairs.

4. GÉUM Linn. Avens.

Cal. 10-cleft, alternate segments minute. *Pet.* 5. *Styles* terminal. *Ovules* lateral. *Pericarps* with long geniculate awns. *Receptacle* elongated. — Named from *γεῦω*, to yield an agreeable flavour. The roots of *G. urbanum* are aromatic.

1. *G. urbánum* L. (common *A.*); flowers erect, heads of fruit sessile, upper joint of the awn glabrous and much shorter than the lower one, cauline leaves ternate, radical ones interruptedly pinnate and lyrate. *E. B.* t. 1400.

Woods and hedges, frequent. *4.* 6—8. From 1 to 2 ft. high. *Root-leaves* on long foot-stalks. *Stipules* large, rounded, lobed and cut. *Flowers* small, yellow. *Calyx* and obovate *petals* patent.

2. *G. rivále* L. (*Water A.*); flowers drooping, heads of fruit stalked, upper joint of the awn feathery about as long as the lower one, cauline leaves ternate radical ones interruptedly pinnate and lyrate. *E. B.* t. 106.

Marshes and wet moory grounds, frequent: sometimes very alpine. *4.* 5—7. — A shorter, but stouter plant than the last. *Flowers* much larger, with erect purplish *calyces* and erect dull purplish orange-coloured *petals*, broadly obovate, clawed. *Stipules* small, ovate and toothed. There is a not uncommon plant, the *G. intermedium* Ehrh., which some call a species, but has now been proved by Dr. T. Bell Salter to be a hybrid between these two: in it the *flowers* are sometimes erect, sometimes drooping, *petals* roundish and clawed, *calyx* and *corolla* intermediate as to position and colour, heads

of *fruit* usually sessile, with the upper joint of the awn hairy but shorter than the lower one, and the *stipules* round and toothed; but it varies in these respects, sometimes resembling the one parent more than the other.

** *Ovule* nearly opposite to the base of the style, radicle superior.

5. *RÚBUS* Linn. Bramble. Raspberry.

Cal. 5-cleft. *Pet.* 5. *Style* short subterminal. *Ovule* suspended. *Fruit* superior of several single-seeded juicy *drupes*, placed upon a protuberant spongy *receptacle*.—Name from the Celtic *reub*, to *tear* or *lucerate*; on account of the prickly stems of the true Brambles.

[The species of our division B. form the true Brambles, and have long puzzled Botanists. Some unite all into one species; some are of opinion that we possess thirty-six species in Britain alone, besides many varieties esteemed by others equally distinct. In the British Flora, 3rd, 4th, and 5th editions, Mr. Borrer described ten species, but further observations rendered it necessary either to reduce these or to add many more. In the 6th and 7th editions, we followed the former course, and admitted only seven; these seven we propose still to retain, but intermediate forms have now been obtained between *R. fruticosus* and *carpinifolius*, as also between *R. corylifolius* and *R. cæsius*, so the whole might be advantageously reduced to five. These five would then accord with the four sections into which Mr. Babington has now divided the group. We formerly gave a sketch of the species by Dr. T. Bell Salter, but as his sections did not coincide with our species, and were so defined as frequently to include varieties of species arranged in another section, we shall at the close of this genus give the species adopted by Mr. Babington.]

A. *Leaves* pinnate (or ternate). *Stem*¹ nearly erect, biennial, woody, accompanied with *suckers*.

1. *R. idæus* L. (common *R.*); leaves pinnate with 5 or 3 leaflets with close white down underneath, foot-stalks channeled, stems nearly erect downy prickly not rooting, flowers drooping, petals as short as the calyx, ripe fruit separating readily from the receptacle. *E. B.* t. 2442. *R. Læscii* Bab.?

Woods, especially in the north. *h.* 6, 7.—*Stems* of two kinds: one is upright, which the first year produces only leaves, but in the second bears fruit and dies; the other is surelose and quite below ground, bearing no leaves, and roots at the extremity, thus forming new plants. *Leaflets* somewhat cut and serrated. *Fruit* scarlet in a wild state.

¹ By *stem* is meant the barren root-shoot; and the prickles and leaves, when not otherwise mentioned, are those upon that shoot. Both here and in the genus *Rosa*, *setæ* are hairs or bristles that are glandular at the apex; *aciculæ* are straight rigid hairs without glands, or slender prickles: in some species a gradual transition may be observed from the one extreme to the other, thus reducing the value of any character obtained from them. The form, texture, incision, petiolation, and overlapping of the leaflets and the form of the inflorescence are, in our opinion, too variable to be used for distinguishing the species. All the true Brambles are, we

B. Leaflets 5, digitate or pedate, or ternate, rarely pinnate. Stem (mostly) biennial, woody, without surculi.

2. *R. suberectus* And. (upright B.); stem nearly erect not rooting nearly glabrous, prickles uniform without setæ, leaflets quinate or sometimes pinnate without close white down underneath. *E. B. S. t. 2572.* *R. plicatus* W. et N.: *E. B. S. t. 2714.*

Thickets, hedges, and boggy places. *h. 6—8.*

3. *R. rhamnifolius* W. et N. (*Buckthorn-leaved B.*); stem arched rooting nearly glabrous and without stellate down, prickles almost confined to the angles of the stem uniform without setæ or sessile glands, leaflets quinate paler underneath but not with close white down. *E. B. S. t. 2604.*

Hedges, thickets, and woods. *h. 7, 8.*

4. *R. fruticosus* L. (*common B.*); stem arched rooting angular furrowed without spreading hairs or setæ but often with stellate down, prickles confined to the angles of the stem uniform, leaflets stalked quinate with close white or grey down underneath. *E. B. S. t. 715.*

Thickets and hedges. *h. 7, 8.*—*Panicle* elongated, its prickles strong, hooked. *Calyx* tomentose. *R. thyrsoides* Wimm. appears to be a form of this species with the under side of the leaves rather grey than white, more softly tomentose, and with more copious hairs; but *R. argenteus* of Lees seems to connect them, while *R. thyrsoides* itself and *R. Grabowskii* of Weihe tend to unite them all with *R. carpinifolius*; from which they chiefly differ by the want of spreading hairs on the stem.

5. *R. carpinifolius* W. et N. (*Hornbeam-leaved B.*); stem arched or prostrate rooting usually hairy with often stellate down, prickles confined to the angles of the stem uniform without or with few setæ or sessile glands, leaflets stalked quinate or ternate not imbricate without close white down underneath. *E. B. S. t. 2664.* *R. leucostachys* Sm.: *E. B. S. t. 2631.* *R. macrophyllus* W. et N.: *E. B. S. t. 2625.*

Hedges, thickets, and woods. *h. 7, 8.*

6. *R. glandulosus* Bell. (*glandular B.*); stem arched or decumbent rooting hairy not glaucous, prickles scattered unequal with copious aciculæ or setæ, leaflets quinate or ternate without close white down underneath, calyx erect patent or reflexed in fruit. *E. B. S. t. 2883.* *R. Koehleri* W. et N.: *E. B. S. t. 2605.*

Woods, thickets, and hedges. *h. 7, 8.*

believe, destitute of the surculi or suckers (long underground sarmentose stems) of the Raspberries.

7. *R. corylifolius* Sm. (*Hazel-leaved B.*); stem round or bluntly angular arched rooting nearly glabrous, prickles scattered nearly equal without or with few aciculæ or setæ or sub-sessile glands, leaflets usually quinate without close white down underneath, calyx of the fruit reflexed or patent. *E. B.* t. 827.

Hedges and thickets. *h.* 6, 8.—*Panicle* lax, corymbose, or with corymbose branches.

8. *R. cæsius* L. (*Dewberry*); stem round or bluntly angular prostrate or arched rooting more or less glaucous, prickles scattered very unequal with (sometimes very few) setæ, leaflets ternate or quinate without close white down underneath, calyx setose clasping the fruit. *E. B.* t. 826.

Thickets, hedge-banks, and borders of fields. *h.* 6, 7.—*Fruit* glaucous, or nearly black.

C. Stem herbaceous or nearly so.

* *Leaflets ternate.*

9. *R. saxatilis* L. (*Stone B.*); stems slender rooting herbaceous nearly unarmed, flower-shoots erect with a panicle of few flowers, leaflets ternate slightly downy. *E. B.* t. 2233.

Stony mountainous places, especially in the north. *u.* 6—8.—Rooting stems or runners annual, erect ones slender, 8—10 inches high, with a few weak prickles. *Leaflets* sometimes only 2, ovate. *Petals* minute, narrow, greenish yellow. *Fruit* of very few (1—4) red, (comparatively) large drupes.

10. *R. *arcticus* L. (*arctic R.*); stems erect not rooting unarmed bearing (mostly) one flower, petals roundish notched, leaflets ternate glabrous obtusely serrated. *E. B.* t. 1585.

Mountain turf bogs. Isle of Mull, and Ben-ghlo in Athole. *u.* 6.—The only place in Scotland which agrees with the foreign localities of this plant is in the low moors near the station of *Menziesia cærulea*; where stood the old Caledonian forest: there only need it be looked for; the two stations above given have been repeatedly searched in vain for it. *Stems* 4—6 inches high, slender, having 3—4 leaves, with creeping roots or underground leafless rooting stems. *Flowers* of a deep rose-colour, large for the size of the plant. *Fruit* purplish-red, highly prized by the Swedes.

** *Leaves simple.*

11. *R. Chamæmorus* L. (*Mountain R., or Cloudberry*); diœcious, stem herbaceous erect unarmed one-flowered, leaves lobed and plaited. *E. B.* t. 716.

Alpine turf bogs; north of England, Wales, Scotland, and Ireland. *u.* 6, 7.—Erect, 8—10 inches high, creeping as in the last species and in *R. idæus*. *Flowers* large, white. *Fruit* large, orange-red, of an agreeable flavour.

[*RÚBUS.* Sect. B. p. 123.

As already mentioned, we intend to give here the British species proposed by Mr. Babington. In the Flora merely of a country or province, the object is to enable the student unacquainted with any of the species to make them out with facility, and therefore the characters of the subdivisions of a genus and the arrangement of the species ought necessarily to be frequently artificial. Between some of Mr. Babington's sections, as defined by him,—as between the *Nitidi* and *Villicaules*, and between A. and C. (our a. and c.) of the *Glandulosi*,—we do see the practical distinction; the stem of the *Villicaules* being described as much without hair or stellate down as those of the *Nitidi*. We have, therefore, in some cases, made slight alterations; we do not say improvements, for our characters are still deficient in that precision which can only be supplied by a purely artificial key. We have abridged the characters of the species, and placed them as much in contrast as possible; so that the species themselves may be considered either as distinct ones, or only as varieties of our own, according to the pleasure of the reader. After the current number we have, therefore, referred to that number of our species under which we consider it ought to rank. The barren stem and its prickles, leaves, &c., are alone referred to, unless specially mentioned.

* *Suberecti.* Stem shrubby, biennial, erect, not rooting.

a. *Calyx of fruit reflexed, prickles confined to the angles of the stem.*

1. (2.) *R. suberectus* And.; leaflets thin flexible, those of the flowering shoots all narrowed below, panicle thyrsoïd. *E. B. S. t.* 2572.
R. umbrosus Lees.
2. (2.) *R. plicatus* W. et N.; leaflets coriaceous, lateral ones of the flowering shoots dilated below, panicle pyramidal. *E. B. S. t.* 2714.

b. *Calyx of fruit erecto-patent, prickles not confined to the angles of the stem.*

3. (2.) *R. fissus* Lindl.; leaflets coriaceous, panicle corymbose.

** Stem arched or prostrate, shrubby, rooting at the end.

- i. *Nitidi.* Stem slightly pilose, without stellate down or setæ. Prickles chiefly on the angles of the stem, nearly equal.

a. *Leaflets paler below and more or less pilose beneath.*

† *Leaflets stalked, not imbricate, plicate, green and shining above.*

4. (3.) *R. nitidus* Bell Salt.; stem shining smooth, terminal leaflets ovate or roundish acuminate, panicle compound shining hairy with spreading short branches. *R. Lindleianus* Nees.

†† *Basal or all the leaflets sessile or shortly stalked, imbricate; stem furrowed.*

5. (3.) *R. latifolius* Bab.; terminal leaflet cordato-acuminate, panicle short with "ascending few-flowered corymbose branches, its top and pedicels tomentose and hairy."
6. (3.) *R. imbricatus* Hort.; leaflets opaque above, terminal one roundish-cordate, panicle narrow with long racemose branches very hairy but not tomentose at the top.

b. *Leaflets with soft grey tomentum or thick down beneath.*

7. (3.) *R. affinis* W. et N.; leaflets slightly wavy dull green and pilose above, "panicle compound with ascending cymose often elongated leafy branches," rachis tomentose above. *R. lentiginosus* Lees.
8. (3.) *R. incurvatus* Bab.; leaflets coriaceous shining above with incurved wavy margins, "panicle narrow with short patent corymbose branches" very hairy and tomentose at the top.
9. (3.) *R. rhamniifolius* W. et N.; leaflets thick coriaceous opaque flat, stem distinctly furrowed, panicle pyramidal with distant few-flowered racemose branches tomentose below. *E. B. S. t.* 2604.

ii. *Villicaulis*. Stem (or sometimes only the young shoots) pilose or with stellate down, or both, with scattered subsessile glands or a few setæ. Prickles chiefly on the angles of the stem.

a. *Stem angular, nearly free from hairs. Leaves with grey or white down or tomentum beneath. Panicle with strong and hooked prickles.*

10. (4.?) *R. Grabowskii* Weihe; stem nearly glabrous, leaves ashy and downy beneath.
11. (4.?) *R. thyrsoides* Wimm.; stem nearly glabrous or slightly downy furrowed, leaves coriaceous grey hairy and tomentose beneath. *R. argenteus* Lees.
12. (4.) *R. discolor* W. et N.; stem with stellate down furrowed, leaves coriaceous with close white firm tomentum beneath. *R. fruticosus* L.; *E. B. t.* 715.

b. *Stem angular hairy. Leaves grey or white beneath.*

13. (5.) *R. leucostachys* Sm.; stem with fascicled hairs and copious stellate down, leaves softly tomentose and hairy beneath, prickles of panicle slender straight. *E. B. S. t.* 2631.
14. (5.) *R. carpinifolius* W. et N.; stem with fascicled or solitary hairs and little or no stellate down, leaves hairy or tomentose beneath, prickles of panicle decurved. *E. B. S. t.* 2664.

c. *Stem angular. Leaves green on both sides.*

15. (5.) *R. villicaulis* W. et N.; stem with spreading hairs, leaves thick velvety shining with reddish veins beneath. *R. sylvaticus* Lees.
16. (5.) *R. pampinosus* Lees; stem with few hairs, leaves thin hairy beneath on the veins but otherwise nearly glabrous.
17. (5.) *R. Salteri* Bab.; stem furrowed nearly glabrous, leaves thin hairy hard and rough beneath, branches of the panicle short few-flowered patent and subcorymbose. *R. calvatus* Blox.
18. (5.) *R. macrophyllus* W. et N.; stem with scattered spreading hairs, leaves thin tomentose or pilose beneath, branches of the panicle racemose ascending. *E. B. S. t.* 2625. *R. Schlechtendalii* Bab. *R. amplificatus* Lees.

d. *Stem nearly round, hairy. Leaves green on both sides.*

19. (5.) *R. mucronatus* Blox.; prickles of stem few small slender straight, leaves rough and hairy on both sides.
20. (5.) *R. Sprengeli* Weihe; prickles of stem numerous unequal decurved, leaves distantly pilose beneath. *R. Borreri* Bell Salt.

iii. *Glandulosi*. Stem with many hairs, glands, setæ, and aciculæ passing into scattered prickles.

a. *Leaflets rarely 3, usually 5, digitate or pedate, basal ones stalked, not imbricate. Stem prostrate (in Sp. 21, and then the sepals have a leafy point,) or arched, angular; prickles passing abruptly into aciculæ and setæ. Panicle long and leafy.*

† *Leaves green and pilose on both sides.*

21. (6.) *R. Bloxamii* Lees; stem prostrate, terminal leaflet broadly obovate cuspidate, panicle with short branches and corymbose top, sepals with a leafy point.

22. (6.) *R. Hystrix* Weihe; stem arched, terminal leaflet obovate-oblong acuminate, panicle with ascending short branches below and short spreading or divaricate ones above, sepals with a flattened dilated point erecto-patent in fruit.

†† *Leaves whitish-green and downy beneath. Sepals reflexed from the fruit. Stem arched. Panicle leafy.*

23. (6.) *R. Radula* Weihe; leaflets unequally and finely serrate, sepals without a leafy point. *R. Lingua Bab.*

24. (6.) *R. rudis* Weihe; leaflets doubly and coarsely serrate, sepals with a leafy point. *R. Leightonii* Lees.

b. *Leaves 5-nate. Prickles passing very gradually into aciculæ and setæ. Stem arched or decumbent in the same species.*

† *Basal leaflets stalked, not imbricate; terminal one obovate more or less acuminate.*

25. (6.) *R. pallidus* Weihe; leaves green and soft beneath, panicle narrow with erecto-patent racemose branches its prickles decurved. *R. rosaceus* Lees.

26. (6.) *R. Koehleri* W. et N.; leaves green and rough beneath, "panicle rather open and broad-topped with short mostly corymbose and patent branches," its prickles straight. *E. B. S. t. 2605.*

†† *Basal leaflets subsessile, usually imbricate, terminal one cordato-ovate acuminate.*

27. (6.) *R. fusco-ater* Weihe?; leaves rugose above green or grey and tomentose beneath, panicle long rather narrow with short erecto-patent subracemose branches. *R. Schleicheri* Leight. *R. Colemanii* Blox.

c. *Leaflets 3 or 5 (digitate? or) pedate, basal ones stalked, not imbricate. Prickles passing rather abruptly into aciculæ and setæ. Stem decumbent roundly or somewhat angular.*

† *Prickles of stem strong.*

28. (6.) *R. pyramidalis* Bab.; stem with few hairs aciculæ and setæ nearly equal short and strong, leaves with recurved edges, base of sepals adpressed to the fruit.

29. (6.) *R. scaber* Weihe; stem with rather few short hairs aciculæ and setæ, leaves flat at the edge, sepals loosely reflexed. *R. Babingtonii* Bell Salt.

†† *Prickles slender or weak.*

30. (6.) *R. Güntheri* Weihe; prickles weak unequal, hairs aciculæ and setæ nearly equal short, sepals of fruit reflexed.

31. (6.) *R. glandulosus* Bell.; prickles slender small unequal, hairs aciculæ and setæ numerous nearly equal short, sepals of fruit erect or patent. *R. Bellardi* *E. B. S.* t. 2883. *R. dentatus* *Blox.* *R. rotundifolius* *Blox.* *R. fuscus* *Bab.* *R. rosaceus* *Weihe.*
32. (6.) *R. hirtus* W. et N.; prickles slender small unequal, hairs setæ and slender aciculæ numerous unequal. *R. Menkii* *Weihe.* *R. foliosus* *Weihe.*

iv. *Cæsii*. "Stem round or bluntly angular, with few or no hairs, setæ, or glands, and usually a glaucous bloom. Prickles usually unequal."

† *Prickles nearly equal.*

33. (7.) *R. Balfourianus* *Blox.*; leaves green on both sides, sepals ovate attenuate erecto-patent in fruit. *R. tenui-armatus* *Lees.*
34. (7.) *R. corylifolius* *Sm.*; leaves pale beneath, sepals ovate reflexed. *E. B. t.* 827.

†† *Prickles very unequal, sepals clasping the fruit.*

35. (8.) *R. nemorosus* *Heyne*; leaflets 3—5-nate, terminal one "roundly cordate" acuminate, sepals ovate acuminate, fruit "blue-black."
36. (8.) *R. cæsius* *L.*; leaflets 3-nate, terminal one ovate or rhomboidal or 3-lobed, sepals ovato-lanceolate with a long point, fruit glaucous. *E. B. t.* 826. *R. tenuis* *Bell Salt.*]

6. FRAGÁRIA *Linn.* Strawberry.

Cal. 10-cleft, segments alternately smaller. *Pet.* 5. *Stam.* many. *Style* short, lateral, near the base of the carpel. *Ovule* ascending. *Achenes* many, minute, placed upon a large fleshy deciduous *receptacle*.—Named from *fragrans*, *odorous*; on account of its fragrant smell.

1. *F. véscæ* *L.* (*Wood S.*); calyx of the fruit spreading or reflexed, hairs of the peduncles widely spreading, those of the pedicels erect or close-pressed silky *E. B. t.* 1524, and *S. t.* 2742.

Woods and thickets, frequent. *ꝯ.* 5—7.

2. *F. *elátior* *Ehrh.* (*Hautboy S.*); calyx of the fruit spreading or reflexed, hairs of the peduncles and pedicels widely spreading somewhat deflexed. *E. B. t.* 2197.

Groves and hedges, in several places in England, where it has escaped from cultivation. *ꝯ.* 6—9.—The plants which bear perfect stamens never produce fruit; but it is doubtful whether it ought to be called imperfectly monœcious or diœcious: most probably the latter.

7. CÓMARUM *Linn.* Marsh Cinque-foil.

Cal. 10- (or more) cleft, segments alternately smaller. *Pet.* 5 (or more) shorter than the calyx. *Style* short lateral, at a distance from the base of the carpel. *Ovule* suspended. *Achenes*

many, minute, inserted on a large spongy permanent *receptacle*.—Named from *κομῆρος*, a term applied by Theophrastus to some plants of the *Arbutus* tribe.

1. *C. palústre* L. (*purple M.*). *E. B.* t. 172. *Potentilla Comarum Nestl.*

Marshes and peat-bogs, frequent. \mathcal{L} . 5—7.—*Stems* ascending. *Leaves* pctioled, with 7 lanceolate deeply serrated *leaflets*, upper ones quinate or ternate, sessile with a pair of ovate *stipules*. *Flower-stalk* branched. *Flowers* of a deep dingy purple.

8. POTENTÍLLA Linn. Cinque-foil.

Cal. 8—10-cleft, segments alternately smaller. *Pet.* 4—5. *Style* short, lateral or nearly terminal. *Ovule* suspended or ascending. *Achenes* numerous, minute, placed upon a small dry flat *receptacle*.—Named from *potens*, *powerful*; from the medicinal properties attributed to some of the species.

* *Leaves* pinnate. *Flowers* yellow.

1. *P. fruticósa* L. (*shrubby C.*); leaves pinnate, leaflets (generally 5) oblong-lanceolate entire, stem shrubby. *E. B.* t. 88.

Rocky and bushy places, rare. Wastdale Scree, Cumberland. Teesdale, Durham and Yorkshire. By the river Don, near Doncaster. Rock-forest, Galway, Ireland. \mathcal{L} . 6, 7.—Hairs on the *receptacle* elongated.

2. *P. anserína* L. (*Silver-weed*); leaves interruptedly pinnate serrate silky especially beneath, peduncles axillary single-flowered, stem creeping. *E. B.* t. 861.

Moist meadows and road-sides, frequent. \mathcal{L} . 6, 7.—Varying much in the degree of silkiness; sometimes silky and white on both sides. *Flowers* large. Hairs on the *receptacles* in this and the next shorter than the glabrous *achenes*. *Leaflets* lanceolate.

** *Leaves* pinnate. *Flowers* white.

3. *P. rupéstris* L. (*Strawberry-flowered C.*); stem erect dichotomous, leaves pinnate, leaflets cuneate-ovate serrate hairy, of the root leaves 5, of the cauline ones 3. *E. B.* t. 2058.

Very rare, on Craig Breiddin, Montgomeryshire. \mathcal{L} . 5, 6.—*Flowers* large. *Achenes* even, glabrous.

*** *Leaves* digitate. *Flowers* yellow. (*Hairs on the receptacle shorter than the glabrous achenes.*)

4. *P. argétea* L. (*hoary C.*); leaves quinate, leaflets cuneiform cut white and downy beneath, their margins revolute, stem decumbent or ascending. *E. B.* t. 89.

Pastures and road-sides, especially in a gravelly soil. 4. 6, 7.—*Flowers* terminal, small, subcorymbose.

5. *P. verna* L. (*Spring C.*); leaflets of root-leaves 5—7 obovate green on both sides sharply-toothed upwards hairy on the ribs beneath and at the edge, lower stipules linear acute, petals obovate longer than the calyx, stem prostrate. *E. B.* t. 37.

Dry pastures, especially in hilly countries. 4. 4—6.—A small, woody, procumbent plant, 3—5 inches in length. *Flowers* at the end of weak leafy branches.

6. *P. alpestris* Hall. fil. (*orange alpine C.*); radical leaves of 5 wedge-shaped somewhat hairy leaflets deeply cut in the upper half, stipules obtuse, upper ones ovate, lower ones lanceolate, petals heart-shaped, stem ascending. *P. aurea E. B.* t. 561 (not *L.*).

Mountains of the north of England. Wales. Breadalbane and Clova mountains of Scotland. 4. 6, 7.—We have endeavoured, but in vain, to detect some certain character by which this might be distinguished from *P. verna*; the extreme *vars.*, it is true, do appear distinct, but they insensibly pass into each other. In general, however, the terminal tooth of the leaflets is prominent, giving them a rounded form at the apex, while in *P. verna* it is shorter than the others, causing the leaflets to appear truncate or emarginate. If retained as a species, surely the name *Salisburgensis*, given to it by Haenke, should be preferred to the much more recent one of the younger Haller.

7. *P. *opaca* L. (*Saw-leaved hairy C.*); radical leaves of 7 hairy linear wedge-shaped leaflets deeply serrate throughout, stem-leaves ternate mostly opposite, stems ascending, petals about as long as the calyx obovate-euneate. *E. B.* t. 2449. *P. intermedia, Nestl. Pot.* t. 8.

Received from Scotland (perhaps from a garden) by the late *Mr. Donn* of Cambridge. Hills of Clova; Braes of Balquidder; and rocks by the sea-shore opposite to Dundee: *G. Don*; but found by no one else. 4. 6.—We have specimens of this, said by *Mr. G. Don* to have been found wild by him, and others from his garden at Forfar. The leaflets are coarsely serrate to the base, and in this respect, as well as in its stouter habit, it differs from the two preceding species. All botanists are not quite agreed that *P. opaca* L. and *P. intermedia* Nestl. (or *P. opaca* Jacq.) are the same; the former, from Linnæus saying that the stem is filiform and confounding it with *P. verna*, is not the supposed Scotch plant, if the two be distinct; it has petals longer than the calyx, while they are of the same length in *P. intermedia*. But to us it is very doubtful if the last be not the luxuriant or cultivated form of the other.

8. *P. réptans* L. (*common creeping C.*); stem filiform prostrate creeping, leaves long-stalked, leaflets 5 obovate-euneiform

serrate, peduncles axillary solitary single-flowered longer than the leaf, achenes granulated scabrous. *E. B. t.* 862.

Meadows, pastures, and way-sides. 4. 6—9.—*Stems* taking root at the joints. *Flowers* yellow.

9. *P. Tormentilla* Sibth. (*Tormentil*); stem-leaves ternate those at the base of the peduncles sessile, leaflets lanceolate or obovate-cuneiform inciso-serrate, stem procumbent or ascending dichotomous upwards, achenes wrinkled.—*α.* leaves all sessile acute except those of the root, stem ascending. *Tormentilla officinalis Sm.: E. B. t.* 863. *T. erecta L.—β.* lower stem-leaves stalked obtuse, stem prostrate sometimes rooting, flowers larger. *Tormentilla reptans L.: E. B. t.* 864.

Moors and heathy places frequent.—*β.* Hedge-banks, borders of fields, and waste places. 4. 6—8.—To one or other of these *vars.* obviously belongs *P. mixta* of Mitten. *Root* large and woody, used medicinally, and by the Laplanders for staining leather of a red colour. *Peduncles* axillary and terminal, forming a dichotomous eyne or panicle, and never springing from a joint that throws out roots or from the axil of a petiolate leaf—This varies with 4 or 5 *petals*, when it becomes difficult to distinguish the *var. β.* from *P. reptans*, and some botanists are of opinion that the two plants are identical, their extremes being represented in *E. Bot.* *P. reptans* is often less creeping than in *E. B. t.* 862; and the present is sometimes not so panicle as in *E. B. t.* 864. Mr. Wilson finds them undistinguishable, while Mr. Forster and Nestler think them quite distinct.

**** *Leaves* quinate or ternate. *Flowers* white.

10. *P. *alba* L. (*white C.*); stems filiform procumbent, root-leaves quinate, upper ones ternate, leaflets oblong with converging serratures silky beneath, achenes glabrous. *E. B. t.* 1384.

Wales (?): Mr. Haviland (*in Huds.*). 4. 6, 7.—Hairs of the *receptacle* shorter than the *achenes*.

11. *P. *tridentata* Soland. (*three-toothed C.*); leaves ternate, leaflets oblong-cuneiform 3-toothed at the extremity glabrous above hairy beneath, petals oval longer than the calyx, achenes downy, stem ascending. *E. B. t.* 2389.

On Werron Hill, Clova, *G. Don*; but found by no one else. 4. 5, 6.—Hairs of the *receptacle* elongated in this and the next. A North American species.

12. *P. Fragariastrum* Ehrh. (*Strawberry-leaved C.*); leaves ternate, leaflets obovate deeply serrate silky on both sides (especially beneath), petals obovate as long as the calyx, stems procumbent. *Fragaria sterilis L.: E. B. t.* 1785.

Woods, banks, and dry pastures, frequent. 4. 3—5.—*Calyx* segments converging after flowering. *Achenes* glabrous.

9. *SIBBÁLDIA* Linn. *Sibbáldia*.

Cal. in 10 alternately large and small segments. *Pet.* 5. *Stamens* 5—10. *Style* short, lateral. *Orule* ascending. *Achenes* 5—10, inserted on a minute dry receptacle (the bottom of the calyx).—Name given in honour of *Robert Sibbald*, who wrote on the Nat. History of Scotland about the latter end of the 17th century, and who published a figure of our Scottish species of this genus.

1. *S. procumbens* L. (*procumbent S.*); leaves ternate, leaflets wedge-shaped tridentate. *E. B. t.* 897.

Near and upon the summits of the Highland mountains of Scotland, abundant. 4. 7. — A small, glaucous, slightly hairy plant, woody at the base and roots. *Pet.* small, yellow, sometimes wanting. *Stam.* 5—7. *Pistils* 5—8 or 10.—Nearly allied to *Potentilla*, as Mr. W. Wilson well observes.

Tribe III. SANGUISORIBIDÆ. *Achenes* 1 or 2, enclosed within the dry tube of the calyx, which is contracted at the orifice. *Calyx* 3- or 5-cleft. *Petals* 0 or rarely 5.—Herbs or shrubs. *Leaves* often compound. (Gen. 10—13.)

* *Style* from near the base of the carpel, ovule ascending.

10. *ALCHEMILLA* Linn. *Lady's Mantle*.¹

Cal. 8-cleft, the 4 alternate and outer segments the smallest. *Pet.* 0. *Stam.* 1—4. *Achenes* 1—2.—Named from the Arabic *alkémelyeh*, *alchemy*; from its pretended alchemical virtues.

1. *A. vulgáris* L. (*common L.*); leaves reniform plaited 6—9-lobed green underneath, lobes rounded serrate. — *a.* leaves and petioles slightly pubescent or glabrous. *E. B. t.* 597. — *β.* leaves and petioles very pubescent or silky. *A. hybrida Pers.* *A. montana Willd.*

Hilly or northern pastures, abundant. 4. 6—8.—*Stem* 1 ft. high or more. *Radical leaves* large, on long foot-stalks, those of the stem with connate toothed *stipules*, upper ones sessile and very small. *Flowers* in many usually rather lax, corymbose, terminal clusters, yellow-green. *Stam.* 4. *Germens* and *achenes* 1—2. *Style* lateral.

2. *A. alpína* L. (*alpine L.*); radical leaves digitate or digitato-partite, leaflets 5—7 obtuse serrate white and satiny beneath. *E. B. t.* 244. — *a.* leaflets distinct to the base. — *β.* leaflets conjoined sometimes to almost a third of their length. *A. argentea Don.* *A. conjuncta Bab.*

¹ *Mantle* of our *Lady* (the *Virgin Mary*); therefore not "*Ladies' Mantle*," as written by many authors.

Mountains in the north of England, and especially Scotland. On Brandon mountain, Ireland. γ . 6—8.—One of the most elegant of our native plants. *Flowers* in interrupted spikes of small terminal or lateral corymbs. *Stam.* 4. Our β . is said to have been found wild in the Clova mountains by Mr. G. Don, and in Glen Sannox, in the Isle of Arran, both in Scotland: it has been for long a well-known denizen of our gardens, under the name of *A. hybrida*; but although it retains all its characters in cultivation (proving it to be a permanent variety), it appears to us to differ too little from the usual form of the species, to be admitted as distinct: in this genus, and even this order, the leaflets are not *jointed* with the petiole, and consequently, according to the view of De Candolle, do not form a *compound* leaf, but merely portions of a simple one: in α . therefore the leaves are only divided to the base: in β . to near the base: there is no other difference. The fig. in *E. Bot.* seems to belong to the *var. \beta*.

3. *A. arvensis* Sm. (*field L.*, or *Parsley Piert*); leaves trifid pubescent, lobes cuneate deeply cut, flowers sessile axillary. *E. B. t.* 1011. *Aphanes. L.*

Fields and gravelly soils, and on wall-tops, where there is any covering of soil. \odot . 5—8.—*Stems* branched, leafy, 4—8 inches long, frequently prostrate. *Leaves* alternate; *stipules* large. *Stam.* varying in number from 1—4. *Germens* 1 or 2.

** *Style nearly terminal. Ovule suspended.*

11. SANGUISÓRBA Linn. Burnet.

Flowers collected into a head, usually perfect. *Cal.* 4-lobed, superior, coloured, with 2—4 scales or bracteas at the base. *Pet.* 0. *Stam.* 4. *Stigmas* capitate, papillose. *Achenes* 1—2. Named from *sanguis*, blood, and *sorbeo*, to take up, or absorb; from the supposed vulnerary properties of the plant.

1. *S. officinális* L. (*great B.*); glabrous, stamens about as long as the perianth.— α . spikes ovate. *E. B. t.* 1312.— β . spikes cylindrical. *S. media* Sm.

Low moist meadows and pastures, on a calcareous soil; chiefly in the north of England; more rare in the Lowlands of Scotland.— β . West of Scotland. γ . 6—8.—*Stem* 1—2 ft. high, branching upward. *Leaves* pinnate; *leaflet* ovate, somewhat cordate at the base. *Heads of flowers* much crowded, dark purple. *Limb of the perianth* in 4 ovate segments, its tube enveloping the germen and having at its base 4 ciliated scales or bracteas (*calyx* of many authors). *Achene* 1, rarely 2. We have not seen the *var. \beta*.: it cannot be *S. media* L. as supposed by Smith, that being a N. American plant with long stamens and a mere *var.* of *S. Canadensis*.

12. POTÉRIUM Linn. Salad-Burnet.

Flowers collected into a head, monœcious or polygamous; upper ones fertile. *Cal.* with 3 or 4 bracteas at the base. *Pet.*

0.—*Barren fl.* *Cal.* of 4 deep segments. *Stam.* 30—40, with very long flaccid filaments. — *Fertile fl.* *Cal.* tubular, contracted at the mouth, with 4 deciduous teeth. *Stigmas* tufted. *Achenes* 1—2, invested with the hardened 4-angled tube of the calyx.—Named from *poterium*, a *drinking-cup*; the plant having been used in the preparation of a drink, called in England a *cool-tankard*.

1. *P. Sanguisorba* L. (*common S.*); calyx of fruit sessile glabrous unarmed reticulate-rugulose not pitted, the angles margined, styles 2, stem somewhat angular. *E. B.* t. 860.

Dry and most frequently chalky pastures, abundant. Rather rare in Scotland and Ireland. *℥.* 6—8.—*Stem* 1—2 ft. high. *Leaves* pinnate, with ovate serrate leaflets. *Flowers* dull purplish. *Inflorescence* in this and the next centrifugal, as in most of the genus.—The leaves taste and smell like cucumber, and are eaten in salad.

2. *P. muricatum* Spach (*muricated S.*); calyx of fruit sessile glabrous wrinkled with pits whose margins are muricated, angles crested, stem somewhat angular.

Dry calcareous soil. Near Cambridge; Heydon and Saffron-Walden, Essex; Box Hill, Warwickshire. *℥.* 7.—Very similar to the last, of which it was formerly considered a variety, and from which it is chiefly distinguishable by the fructiferous *calyx*, and the much larger *fruit*.

13. AGRIMÓNIA Linn. Agrimony.

Cal. turbinate, at length hardened, covered with hooked bristles, 5-cleft. *Pet.* 5, inserted upon the calyx. *Stam.* 7—20. *Achenes* 2.—Name corrupted from *Argemone*, given by the Greeks to a plant supposed to cure the cataract in the eye, called *αργεμα*.

1. *A. Eupatorium* L. (*common A.*); cauline leaves interruptedly pinnate softly villous underneath, leaflets 7—9 rounded at the base with 6—8 coarse serratures on each side, terminal one stalked, spikes elongated interrupted, calyx-tube obconical deeply furrowed to the base, the teeth with a straight point, exterior spines spreading. *E. B.* t. 1335.

Borders of fields, waste places, and road-sides. *℥.* 6, 7. — *Stem* 2 ft. or more high. *Leaflets* deeply serrate; intermediate smaller ones 3—5-cleft. *Flowers* yellow, in a long simple or branched *spike*, with a 3-cleft *bractea* at their bases.

2. *A. odorata* Mill. (*fragrant A.*); cauline leaves interruptedly pinnate softly villous underneath, leaflets 7—9 rounded at the base with 6—8 coarse serratures on each side, terminal one stalked, spikes elongated interrupted, calyx-tube campanulate even when in fruit, the teeth with a straight point, exterior spines very patent or reflexed.

Beaumont, Jersey; Start-point, Devon; Gwithian, Cornwall; Lough Neagh, Ireland. γ . 9, 7. — Of this we have seen no British specimens. According to C. A. Meyer, it differs from the last only by the mature calyx.

Tribe IV. ROSIDÆ. *Achenes* numerous, hairy, terminated with the long persistent style, and enclosed within the fleshy (fruit-like) tube of the calyx, which is contracted at the orifice. *Sepals* 5. *Petals* 5. *Stamens* numerous.—Shrubs with prickly or naked stems. *Leaves* pinnate. (Gen. 14.)

14. RÓSA¹ Linn. Rose. Dog-Rose. Sweet-Briar.

Cal. urn-shaped, fleshy, contracted at the orifice, terminating in 5 segments. *Pet.* 5. *Stam.* many. *Achenes* numerous, hairy, fixed to the inside of the calyx.—Named from the Celtic *rhos*, or *ros* in modern Gaelic; whence was probably derived *rhodd*, red; also the Greek name for a rose, $\rho\acute{o}\delta\omicron\nu$, and $\epsilon\rho\upsilon\theta\rho\omicron\varsigma$, red.

* Shoots setigerous, prickles slightly curved.

† *Bracteas* large.

1. R. **Dicksóni* Lindl. (*Dickson's R.*); "shoots setigerous," prickles scattered slender subulate, leaflets oval coarsely and irregularly serrate hoary and sparingly glandulose beneath, calyx-segments long simple, fruit ovate-urceolate. *E. B. S.* t. 2707.

Ireland; discovered by Mr. J. Drummond. (Lindley.) h . 6.—Scarcely a native according to Irish botanists: it may prove to be a mere garden var. of the next. It is probable that Professor Lindley "has used the term *setæ* for setaceous prickles not tipped with a gland." Mr. Borrer.

2. R. **cinnamómea* L. (*Cinnamon R.*); shoots setigerous, prickles scattered slender subulate, leaflets lanceolate-oblong simply serrate downy and glandulose beneath, calyx-segments long simple, fruit small ovate. *E. B.* t. 2388. (*excl. the fruit.*)

Wood at Aketon Pasture, near Pontefract, Yorkshire (Mr. Sabine has, however, sought for it there in vain). Near Clonmel. At Birkhill, Galston, Ayrshire, but surely not wild. h . 5—7.

†† *Bracteas* small or wanting.

3. R. *spinosíssima* L. (*Burnet-leaved R.*); prickles crowded

¹ For the characters of all the species of this most difficult genus, we are indebted to Mr. Borrer. Copious synonyms and illustrative remarks, for which there is not room in the present volume, may be found in the second edition of the British Flora, p. 226, &c.

unequal mostly straight intermixed with setæ, leaflets small simply serrate, their disk eglandulose, calyx simple, fruit nearly globular. — *α*. leaves subglabrous. *E. B. t.* 187. *R. pimpinollifolia* *L.* — *β*. *pilosa*; “very dwarf, leaves acute hairy on the under surface.” *Lindl.*

Heaths, &c., chiefly on sand and chalk; most common towards the sea. — *β*. Ireland. *h.* 5.

4. *R. rubella* *Sm.* (*red-fruited dwarf R.*); stem and branches densely setigerous throughout, prickles few slender nearly straight, leaflets simply serrate naked, their disk eglandulose, fruit oblong or urceolate. *E. B. t.* 2521, and fruit *S. t.* 2601, fig. 3.

Rare. Sandy sea-coast of Northumberland, sparingly. Banks of the Dee about Abergeldy. *h.* 5. — *Peduncles* setose. This species is united, by Mr. Benthams, to the last species.

5. *R. Hibérnica* *Sm.* (*Irish R.*); shoots and ramuli sparingly setigerous, prickles scattered unequal, larger somewhat falcate, leaflets simply serrate hairy beneath, their disk eglandulose, calyx pinnate, fruit nearly globular. *E. B. t.* 2196.

Counties of Derry and Down, particularly near Belfast. Near Lorton, Cumberland. *h.* “6—11.” *Smith.* — *Peduncles* naked.

6. *R. Wilsóni* *Borr.* (*Wilson’s R.*); prickles crowded unequal straight intermixed with setæ, leaflets simply serrate hairy, their disk eglandulose, calyx simple, fruit ovate-urceolate. *E. B. S. t.* 2723.

On a declivity by the Menai, near Bangor. *h.* 6, 7. — *Peduncles* setose. Dr. Lindley thinks it a *var.* of *R. mollis*: but this and the two preceding seem to be but one species, only distinguishable from *R. spinosissima* by the scarlet not black fruit. As setæ pass insensibly into slender prickles or aciculæ, the species possessing the one may be expected to exhibit the other in some of its varieties; and the greater or less number of either can form no specific distinction.

7. *R. involuta* *Sm.* (*prickly unexpanded R.*); prickles crowded unequal straight intermixed with setæ, leaflets doubly serrate hairy glandulose beneath, stem dwarfish. *E. B. t.* 2068, and fruit *S. t.* 2601, fig. 2.

Hebrides, and Western Highlands of Scotland. Isle of Arran; Islay; Morven. Near Meggarnie in Glen Lyon, and elsewhere in the Highlands. *h.* 6. — Leaves often scarcely at all glandulose, except on the midrib. This species is united, by Mr. Benthams, but doubtfully, to *R. spinosissima*.

8. *R. Sabini* *Woods* (*Sabine’s R.*); shoots and ramuli setigerous, prickles scattered unequal straight or nearly so, leaflets doubly serrate hairy glandulose beneath. — *α*. calyx segments

somewhat pinnate. *E. B. S. t.* 2594. — β . calyx segments almost simple, prickles more numerous. *R. Doniana Woods: E. B. S. t.* 2601. — γ . calyx segments almost simple, larger prickles falcate. *R. gracilis Woods. R. villosa E. B. t.* 583. (*fig. only.*)

Scotland and north of England. — β . Sussex, Warwickshire, Kingston-upon-Thames, and near Edinburgh. — γ . Near Darlington; Pooley Bridge, and between Pooley and Lowther, Cumberland; and near Keswick. *h.* 6. — We do not see how this really differs from the last: the *leaves* are rather more glandulose, but not so much so as in the next section.

** *Shoots mostly without setæ.*

† *Leaves glandulose.*

‡ *Prickles uniform or nearly so; setæ none or very few.*

9. *R. villósa* L. (*villous R.*); prickles uniform nearly straight, leaflets doubly serrate downy glandulose, calyx segments slightly pinnate, root-shoots straight. *R. mollis E. B. t.* 2459.

North of England, Scotland, Wales, and Ireland. *h.* 6, 7. — *Calyx*-segments persistent. The fruit of this and the next is more or less covered with aciculæ or set.

10. *R. tomentósa* Sm. (*downy-leaved R.*); prickles mostly uniform straight or curved, leaflets doubly serrate downy glandulose, calyx segments copiously pinnate. *E. B. t.* 990. *R. scabriuscula Winch: E. B. t.* 1896. (*fig. only?*)

Hedges and thickets, not unfrequent. *h.* 6, 7. — *Calyx*-segments persistent. This is surely a mere variety of the last; it has been united, indeed, by Mr. Bentham.

11. *R. inodóra* Fries (*slightly scented B.*); prickles uniform uncinatè, leaves doubly serrate hairy mostly glandulose beneath, calyx segments closely pinnate mostly deciduous, ramuli without setæ, fruit elliptical or nearly globular. — α . leaves hairy beneath. *E. B. S. t.* 2610, *ad calcem.* *R. Borreri Sm. E. B. S. t.* 2723. *R. dumetorum. E. B. t.* 2579. — β . leaves hairy on both sides. — γ . leaves more copiously glandulose, calyx-segments elongated persistent.

Thickets and hedges chiefly in the south of England. — β . near Edinburgh and elsewhere. — γ . Glen Roy, Inverness-shire; near Newcastle. *h.* 6, 7.

12. *R. micrántha* Sm. (*small-flowered S.*); prickles uniform uncinatè, leaflets doubly serrate hairy glandulose beneath, calyx-segments and pinnæ elongated deciduous, fruit small elliptical and ovate, ramuli sparingly setigerous. *E. B. t.* 2490.

Open bushy commons, thickets and hedges, in the south of England. Abundant on chalk and gravel in some parts of Sussex and Surrey. Essex. South of Ireland. *h.* 6, 7.—United to the next by Mr. Bentham.

‡‡ *Prickles various, intermixed with setæ.*

13. *R. rubiginósa* Linn. (*true S.*); prickles numerous, larger uncinatè, smaller subulate, leaflets doubly serrate hairy glandulose beneath mostly rounded at the base, calyx-segments and pinnæ elongated persistent, primordial fruit pear-shaped. *E. B. t.* 991.

Open bushy places, chiefly in the south of England. Abundant in some places on chalk: more rare in moist hedges. About Edinburgh; and near Passage in Ireland. *h.* 6, 7.

14. *R. sépium* Thuill. (*small-leaved S.*); prickles numerous, larger curved, smaller subulate; leaflets small doubly serrate hairy acute at each end glandulose beneath, calyx-segments and pinnæ elongated, fruit ovate? *Borr. in E. B. S. t.* 2653.

Near Bridport, Warwickshire. Heyford Leys, near Upper Heyford, Oxfordshire. *h.* 6, 7.—United by Mr. Bentham to the last, of which it is probably a variety.

†† *Leaves eglandulose.*

‡ *Styles distinct, included or nearly so.*

15. *R. canína* L. (*common D.*); prickles uniform hooked leaves naked or slightly hairy, their disk eglandulose, calyx-segments fully pinnate deciduous, styles not united, shoots assurgent.—*a.* leaflets naked carinate, serratures simple. *E. B. t.* 992.—*3.* leaflets naked carinate, serratures compound. *R. sarmentacea Woods: E. B. S. t.* 2595.—*γ.* leaflets naked flat, serratures simple. *R. surculosa Woods.*—*δ.* leaflets more or less hairy flat. *R. dumetorum Thuill.: E. B. S. t.* 2610.—*ε.* leaflets more or less hairy not flat. *R. Forsteri Sm.: E. B. S. t.* 2611.

Thickets, hedges, &c., very common. *h.* 6, 7.

16. *R. bractéscens* Woods (*bracteated D.*); calyx-tube globose, prickles hooked, leaflets simply serrate downy beneath bracteas overtopping the fruit.

About Ulverston, Lancashire; and Ambleside, Westmoreland. *h.* 6, 7.—Styles woolly; apparently a mere variety of the last.

17. *R. cæsia* Sm. (*glaucous D.*); prickles uniform uncinatè, leaflets doubly serrate downy their disk eglandulose, calyx sparingly pinnate, styles not united, shoots assurgent.—*a. pubescens*; base of prickles not elongated, peduncles naked or sparingly setose, leaflets slightly downy, fruit ovate-urceolate.

E. B. t. 2367.—*β. incana*; prickles strongly uncinat from a much lengthened base, peduncles hairy, leaflets hoary beneath, fruit large oblong.

Highland valleys of Perthshire and Argyleshire. Northumberland and Durham. *β.* sent from Scotland to Mr. Sabine. *h.* 6, 7. — We do not distinguish this from *R. canina*.

‡ *Styles united in a column, mostly exerted.*

18. *R. systyla* Woods (*close-styled D.*); prickles uniform uncinat, leaves simply serrate, their disk eglandulose, calyx-segments sparingly pinnate deciduous, styles united hairless, shoots assurgent. *R. collina E. B. t.* 1895. (*excl. syn.*)

Thickets, hedges, &c. Sussex, Essex, Middlesex, Berkshire, Kent. Niddrie; hills to the north of Milngavie; and Fort Augustus; Scotland. Near Cork. *h.* 6, 7.—Mr. Benthham considers this to be a form of *R. canina*.

19. *R. arvensis* Huds. (*trailing D.*); prickles uncinat, those of the ramuli feeble, leaves simply serrate deciduous (glaucouscent beneath), their disk eglandulose, calyx-segments sparingly pinnate deciduous, styles united hairless, shoots trailing. *E. B. t.* 188.

Woods, hedges, thickets, &c.; common in England, but rare in the mountainous districts. Lowlands of Scotland. Near Bray, Ireland. *h.* 6, 7.—This is distinguished from all the other British species by its trailing habit; and from *R. systyla*, so far as we can see, by that character alone. It is frequently cultivated under the name of *Ayrshire Rose*; but the true one (*R. capreolata* Neill) has, we believe, the column of styles slightly hairy and shining leaves, and is considered by Sabine a deciduous *var.* of *R. sempervirens*, although it is more probably a hybrid between that species and *R. arvensis*.

SUB-ORD. III. POMEÆ Lindl. *Fruit consisting of several united carpels adhering by their back to the inside of the calyx-tube and forming an inferior 1—5-celled pome, the cells lined with a cartilaginous or bony substance. Seeds 1 or more, ascending. Petals several.—Trees or shrubs. Leaves alternate, simple or divided, with free stipules. Flowers in terminal cymes, white or pink. (Gen. 15—18.)*

15. MÉSPILUS Linn. Medlar.

Cal. segments large, foliaceous. *Pet.* large, roundish. *Disk* large, secreting much honey. *Styles* 2—5, glabrous. *Fruit* turbinate, with the upper ends of the cells, which are bony, exposed.—Named from *μεισιλη*, the Greek word for *medlar*.

1. *M. * Germánica* L. (*common M.*); leaves lanceolate a little downy, flowers solitary nearly sessile terminal, styles 5. *E. B. t.* 1523.

Hedges, in Cheshire and Sussex. Bidborough, Kent. Red-hill, Surrey; and, in its wild thorny state, in a hedge, between Reigate and Nutfield. Jersey. *h.* 5, 6.

16. *CRATÆGUS* Linn. Hawthorn.

Cal. segments short, acute. *Pet.* large, roundish. *Styles* 1—5. *Fruit* oval or round, concealing the upper end of the cells, which are bony. Lindl.—Named from *κρατος*, *strength*; in allusion to the extreme hardness of the wood.

1. *C. Oxyacantha* L. (*Hawthorn*, *White-thorn*, or *May*); spiny, leaves glabrous cut into 3 or 5 deeply serrate segments cuneate at the base, flowers corymbose, calyx not glandular, styles 1—3. *Mespilus Sm.*: *E. B.* t. 2504. *C. monogyna* Jacq.

Woods and hedges. *h.* 5, 6.—Variable in the form of its *leaves*, in the downiness of the *cal.*, and in the colour of the *flower* and *fruit*.

17. *COTONEÁSTER* Lindl. Cotoneaster.

Flowers polygamous. *Cal.* turbinate, with 5 short teeth. *Pet.* 5, small, erect. *Stam.* erect, the length of the teeth of the *cal.* *Fruit* turbinate, with its nuts adhering to the inside of the *cal.*, but not cohering in the centre.—Named from *cotoneum* (*κυνθωνιον*, Gr.), the *quince*.

1. *C. vulgáris* Lindl. (*common C.*); leaves oval, calyx glabrous except at the margin, peduncles slightly downy. *E. B. S.* t. 2713.

Limestone cliffs at Ormesbead, Caernarvonshire. *h.* 5, 6.

18. *PÝRUS* Linn. Pear. Apple. Service.

Cal. of 5 small segments. *Pet.* 5, large, roundish. *Styles* 2—5. *Fruit* fleshy, with 5 cartilaginous or coriaceous 2-seeded cells.—Name derived from the Celtic *peren*, or Gaelic *peur*, a *pear*; but more immediately, on account of its shape, from *πυρ*, *flame*; which, as well as the origin of *fir*-tree, may arise from the ancient polyglot vocable *ar*, *er*, *or*, or *ur*, denoting *light* or *flame*.

1. *P. communis* L. (*wild P.*); leaves simple ovate serrate, peduncles corymbose, fruit turbinate, styles distinct. *E. B.* t. 1784.

Woods and hedges. *h.* 4, 5.—Origin of our *Pear*.

2. *P. Málus* L. (*Crab A.*); leaves ovate acute serrate, flowers in a sessile umbel, styles combined below, fruit globose. *E. B.* t. 179.

Woods and hedges. *h.* 5.—*Fruit* austere, of which verjuice is made.—Origin of our *Apple*, a word derived from the Celtic *ball*, a *round body*; whence also *abhall* in Gaelic, and *apfel* in German.

3. *P. torminális* Sm. (*wild S.*); leaves ovate or cordate lobed and serrate, lower lobes larger and spreading, peduncles corymbose. *Cratægus L.*: *E. B.* t. 298.

Woods and hedges, chiefly in the middle and south of England. *h.* 4—6.—Young leaves pubescent or tomentose beneath, old ones almost glabrous. *Flowers* rather large, white. *Fruit* small, greenish-brown, spotted.

4. *P. *doméstica* Sm. (*true S.*): leaves pinnate downy beneath, leaflets serrate upwards, flowers panicle, fruit (large) obovate. *E. B.* t. 350. *Sorbus L.*

Solitary tree in Wyre Forest, near Bewdley, Worcestershire. *h.* 5.—Segments of the *calyx* recurved after flowering. *Styles* jointed, woolly to the apex. *Habit* of the following; but differing in its rather larger *flowers* and the much larger *fruit*, which resembles a small pear, an inch long, with a horny lining to the cells. The *inflorescence*, too, although sometimes short and broad, is never a true corymb; but the chief character lies in the fruit.

5. *P. aucupária* Gærtn. (*Mountain-ash* or *Rowan-tree*); leaves pinnate usually glabrous when old, leaflets serrate, flowers corymbose, fruit (small) globose. *Sorbus E. B.* t. 337.

Mountainous woods and hedges, frequent, especially in the Highlands of Scotland. *h.* 5, 6.—The cells of the fruit are coriaceous and flexible in this and the next.

6. *P. A'ria* Sm. (*white Beam-tree*); leaves somewhat ovate serrate cut or pinnatifid or partly pinnate white and downy beneath, flowers corymbose, fruit globose.—*α.* “leaves oval or oblong unequally and doubly serrate or slightly lobed towards the end, nearly entire below.” *E. B.* t. 1858.—*β.* “leaves oblong doubly serrate near the apex pinnatifid below, pinnæ lanceolate oblong serrate the two lowermost distinct.” *P. pinnatifida Sm.*: *E. B.* t. 2331. *P. Fenniea Bab.*—*γ.* “leaves broad lobed, lobes triangular oval toothed deepest towards the middle of each side of the leaf.” *P. Seandiea Bab.* *P. Aria β. Sm. P. intermedia Ehrh.*

Mountainous woods, especially in a chalk or limestone country; England and Scotland, Connemara and Killarney, Ireland.—*β.* Isle of Arran, Scotland.—*γ.* Hilly woods in England. *h.* 5, 6.—*Fruit* red, rather larger than the last. There is a general character about all the above varieties which to us links them together; but Mr. Babington has come to an opposite conclusion, and we quote from him the only differences that are indicated.

ORD. XXVIII. ONAGRACEÆ *Juss.*

Calyx-tube adnate with the *ovary* entirely or in part; *limb* 2- or generally 4-lobed, the lobes valvate in æstivation. *Petals* 2, generally 4, twisted in æstivation, arising from the mouth of

the calyx. *Stamens* inserted into the calyx, and twice as many as its lobes, or fewer. *Ovary* of 2—4 cells, often crowned by a disk. *Style* filiform; *stigma* capitate or lobed. *Fruit* a berry, or dry and usually dehiscent. *Seeds* without albumen.—Herbs or Shrubs. Leaves frequently opposite.

1. *EPILOBIUM*. Stam. 8. Cal.-limb divided nearly to the base, deciduous. Seeds many, with a tuft of hairs.
2. *CENOTHERA*. Stam. 8. Cal.-limb tubular at the base, deciduous. Seeds many, naked.
3. *ISNARDIA*. Stam. 4. Cal.-limb 4-parted, persistent. Seeds many, naked.
4. *CIRCEA*. Stam. 2. Seeds 1—2.

1. *EPILOBIUM* Linn. Willow-herb.

Cal.-limb deciduous, 4-partite or nearly so. *Pet.* 4. *Stam.* 8. *Capsule* elongated 4-celled, 4-valved, many-seeded. *Seeds* with a tuft of hairs at one extremity.—Named from *επι*, upon, and *λοβος*, a pod; the flower being placed upon the top of the elongated seed-vessel.

* *Flowers irregular. Stamens and style bent down. Cal.-limb 4-partite.*

1. *E. angustifolium* L. (*Rose-bay W.*); leaves scattered lanceolate or linear-lanceolate veined glabrous, flowers irregular subspicate, pedicels free from the bractea, stamens declined.—*α.* flowers larger, capsule scarcely an inch long spreading. *E. B. t.* 1947.—*β.* flowers smaller, capsule about $2\frac{1}{2}$ inches long linear erect. *E. macrocarpum* Steph. in *Ann. Nat. Hist.* viii. 170.

Moist banks and margins of woods; rare in England, less so in Scotland. Near Enniskerry, Ireland. *ϗ.* 7.—*Stems* 4—6 feet high. Whole plant very handsome. The *var. α.* is that common in gardens, and rarely produces seed.

[We possess specimens of *E. angustissimum* of Curtis, the *E. rosmarinifolium* of Haenke, said to be collected in Glen Tilt, Scotland, by Mr. J. Robertson; this has not yet been verified by others: the species may be easily recognised by the linear veinless obsoletely toothed leaves which are revolute at the margin, the pedicel combined for some way with the stalk of the bractea, and by the declined stamens, which are as long as the style.]

** *Flowers regular. Stamens and styles erect. Stigmas 4-cleft. Cal.-limb cleft down to its short campanulate base.*

2. *E. hirsútum* L. (*great hairy W.*); mostly creeping, leaves semi-amplexicaul ovate-lanceolate, deeply serrate hairy, stem much branched erect, flower-buds rounded woolly mucronate, stigma 4-cleft. *E. B. t.* 838.

Sides of ditches, rivers, and lakes, frequent. *ϗ.* 7, 8.—Almost

equal in size to the last. *Root* perennial. *Flowers* corymbose, large. *Seeds* oblong, acute at the base.

3. *E. parviflorum* Schreb. (*small-flowered hairy W.*); leaves sessile lanceolate slightly toothed downy on both sides, stem nearly simple rounded very downy or nearly glabrous, flower-buds erect ovoid, stigma 4-cleft, seeds obovate-oblong, root fibrous. *E. B. t.* 795.

Marshes and banks of lakes and rivers, frequent. 4. 7, 8. — The much smaller size of this species in all its parts, being scarcely more than 1—1½ ft. high, besides the above characters, serves to distinguish it from the preceding, with which it has been confounded.

4. *E. montanum* L. (*broad smooth-leaved W.*); leaves shortly stalked ovate-oblong acute rounded at the base glabrous all toothed, stem rounded downy as well as the fruit, flower-buds drooping, stigma 4-cleft, seeds oblong obtuse at both ends, root fibrous. *E. B. t.* 1177.

Dry shady banks, walls, roofs of cottages, &c., frequent. 4. 6, 7. — *Stem* 6 inches to 1 ft. high. Much resembling *E. roseum*; but distinguished by its 4-fid stigma: it has, too, usually more shortly petiolate, deeply toothed leaves; and larger flowers.

5. *E. lanceolatum* Seb. et Maur. (*spear-leaved W.*); leaves stalked lanceolate irregularly toothed, narrowed to the entire base, stem obscurely angular downy, flower buds nodding ovoid, stigma slightly lobed, seeds obovate-oblong, root fibrous. *E. B. S. t.* 2935.

Near Tintern, Monmouthshire; and near Bristol. 4. 7—9. — Almost intermediate between *E. montanum* and *E. roseum*: it seems to be *E. roseum* of some Swiss collectors, and to be comprehended by Seringe in De Candolle's Prodr. along with *E. roseum* Schreb. (not DC.) under his character of *E. montanum*. It differs from *E. montanum* by the lobes of the stigma, erect stalked leaves, and a tendency towards an angular stem; and from *E. roseum* by the more decided lobes to the stigma, and stem less angular; but it is perhaps a mere variety of this last.

*** *Flowers regular, stamens erect, stigma undivided or nearly so.*

6. *E. róseum* Schreb. (*pale smooth-leaved W.*); leaves ovate-lanceolate stalked tapering at both ends finely toothed, stem erect with two sharp and two obscure angles, buds nodding ovoid acuminate, stigma undivided or slightly lobed, root fibrous. *E. B. t.* 693.

About London; in Essex, Sussex, and Hants. Forfarshire and Moray. 4. 7, 8. — *Scions* none, or in autumn short, with a rosulate tuft of leaves. Distinguished from *E. montanum* by its clavate stigma, stalked leaves, and slightly angled stem; and from *E. tetragonum* by the broader leaves which are stalked, stem not so distinctly 4-angled, and flower-buds nodding.

7. *E. tetragónum* L. (*square-stalked W.*); leaves lanceolate sessile denticulate, stem with 2—4 angles, stigma undivided, flower-buds erect, seeds oblong-obovate. *E. B. t.* 1948. *E. virgatum* Fries. *E. obscurum* Schreb. *E. Lamyi* Schult.?

Sides of ditches and watery places, common. 4. 7, 8.—In the genuine forms of the species the scions are short and terminate in a rose-shaped tuft of leaves. In what is called *E. virgatum*, or *obscurum*, the scions are elongated with scattered leaves, and in *E. Lamyi* Schultz there are none; as to the two last, we have observed them close together, the first in a ditch, the second on a stone and lime wall, and in this instance the want of scions was caused by situation: other circumstances may cause them to disappear elsewhere.

8. *E. palústre* L. (*narrow-leaved marsh W.*): leaves narrow-lanceolate cuneate at the base sessile nearly entire and as well as the rounded erect stem subglabrous, stigma undivided, flower-buds drooping, seeds fusiform, root with filiform scions. *E. B. t.* 346.

Boggy places and the sides of lakes and ditches. 4. 7, 8.—About a foot high. *Stem* rooting near the base. *Scions* elongated with scattered small leaves. *Flowers* small.

9. *E. alsinifólium* Vill. (*Chickweed-leaved W.*); leaves shining ovate-acuminate nearly sessile glabrous, lowermost ones entire, the rest toothed, stem erect from a long rooting base with two obscure angles, its upper part and germen slightly pubescent, flower-buds nodding, stigma entire, seeds fusiform, root with elongated scions with scattered leaves. *E. B. t.* 2000.

Sides of alpine rivulets. On the Cheviots. Aber waterfall, N. Wales. Frequent on the Scottish, especially the Highland, mountains. 4. 7.—This has many of the characters, in its *leaves* and *stem*, of *E. montanum* and *E. roseum*; but the *leaves* have a flaccid subpellucid appearance, and the stem is stoloniferous, so that the eye readily distinguishes the species.

10. *E. alpinum* L. (*alpine W.*); leaves elliptical obtuse glabrous on short foot-stalks nearly entire, stem from a rooting base with 2 angles nearly glabrous and fruit entirely so, flower-buds nodding, stigma undivided, seeds obovate pointed. *E. B. t.* 2001. *E. anagallidifolium* Lam.

Wet places near springs, and by the sides of rivulets on all the Highland mountains. 4. 7.—*Stem* 2—4 inches high. *Root* with scions, which are either short with a tuft of leaves or elongated with scattered leaves. *Stem* with two lines of very obscure pubescence, procumbent and rooting at the base. *Flowers* seldom more than 1 or 2 from the summit of the stalk, at first gracefully drooping, bright purple-red. *Fruit* erect, often as long as the plant itself. In what is called *E. anagallidifolium*, the stem has a much longer rooting base, and longer scions than in the usual state of *E. alpinum*.

2. *ÆNOTHERA* Linn. Evening-Primrose.

Cal.-limb deciduous, tubular at the base, deeply 4-cleft upwards; the segments reflexed, more or less combined. *Pet.* 4. *Stam.* 8. *Caps.* 4-valved, with many naked seeds.—Named from οἶνος, *wine*, and ἔρρα, *searching* or *catching*; from the root having caught the perfume of wine.

1. *Æ. *biennis* L. (*common E.*); leaves ovate-lanceolate toothed, stem somewhat hairy, flowers sessile subspicate, stamens about as long as the corolla, capsules nearly cylindrical 4-toothed. *E. B. t.* 1534.

Sandy soils near Liverpool, also in Suffolk and Warwickshire. ♂. 7—9. — This genus is altogether American. Plant 2—3 feet high. *Stem* roughish. *Flowers* yellow, fragrant, expanding in the evening.

3. *ISNARDIA* Linn. Isnardia.

Cal.-limb 4-partite, permanent. *Pet.* 4, or wanting. *Stam* 4. *Stigma* capitate. *Caps.* obovate or cylindrical, 4-celled, nearly dehiscent, many-seeded. *Seeds* naked.—Named after *Antoine d'Isnard*, a botanist and professor at Paris, in the beginning of the last century. — As the genus is defined here it includes *Ludwigia*.

1. *I. palustris* L. (*Marsh I.*); stem procumbent rooting glabrous, leaves opposite ovate acute stalked, flowers axillary solitary sessile apetalous, capsule obovate 4-angled. *E. B. S. t.* 2593. *Ludwigia Ell.*

South of England, very rare. In a pool at Buxtead, Sussex. Abundant in a bog on Petersfield Heath; also near Brokenhurst. Hants. Jersey. ☉. 6, 7. — Detected by *Mr. Goodyer* on Petersfield Heath, previous to 1667, but lost sight of until rediscovered in Sussex, by *Mr. Borrer*, in 1827. It is frequent on the continent of Europe, in N. America, and the temperate parts of Asia.

4. *CIRCÆ'A* Linn. Enchanter's Nightshade.

Cal.-limb deciduous shortly tubular at the base, deeply 2-cleft upwards. *Cor.* of 2 petals. *Stam.* 2. *Ovary* 1—2-celled, *ovules* solitary in each cell, erect. *Stigma* 2-lobed. *Caps.* hispid with hooked hairs, scarcely dehiscent, 1—2-celled; cells 1-seeded.—Named from the enchantress *Circe*; either from the prettiness of its flowers, or, as some say, from its growing in damp shady places, where plants used for incantations are found.

1. *C. Lutetiana* L. (*common E.*); stem erect pubescent, leaves ovate acuminate slightly repand-toothed usually longer than the subterete petiole, bracts none, calyx hairy, ovary globose 2-celled at length broadly obovate. *E. B. t.* 1056.

Woods and coppices in shady situations, common. *4.* 6—8.—*Rhizome* creeping. *Stem* 1—1½ ft. high. *Leaves* scarcely cordate at the base, upper ones narrow-ovate.—The only certain character between this and the next is afforded by the structure of the ovary, as first pointed out by Dr. Wight; that giving it the difference of external form: but even this is diminished in value by the 2-lobed stigma, indicating a tendency to produce the second cell also, in the ovary of *C. alpina*. The nectary which surrounds the base of the filament is a little more prominent than in the following species.

2. *C. alpina* L. (*alpine E.*); stem ascending nearly glabrous, leaves cordate toothed shining as long as the flat petiole, pedicels subtended by minute setaceous bracts, calyx more or less glabrous, ovary 1-celled at length inversely oblong. *E. B.* t. 1057.

Woods, coppices, and stony places, especially by the sides of lakes in the north of England and Scotland. *4.* 7, 8.—This is very near to the preceding; but is usually much smaller and with a narrower ovary and fruit. The *petioles* appear flat in consequence of the leaf being usually decurrent along it, constituting, as it were, membranaceous wings. Mature *fruit*, which is abundant on *C. Lutetiana*, we have seldom observed on this plant. What is called *C. intermedia* sometimes belongs to the present species, sometimes to the last.

ORD. XXIX. HALORAGACEÆ R. Brown.

Calyx-tube adnate with the *ovary*; *limb* of fertile flowers minute, 3—4-partite or wanting. *Petals* present or wanting. *Stamens* equal in number to the lobes of the calyx, or double as many, rarely fewer. *Ovary* with 1—4 cells; *ovules* solitary pendulous. *Stigmas* as many as there are cells, papillose or penicilliform. *Fruit* dry, indehiscent, 1—4-celled, or composed of 4 indehiscent carpels slightly cohering by their inner angles and eventually separating. *Seeds* solitary, pendulous. *Albumen* fleshy, sometimes very thin. *Embryo* straight. *Radicle* superior.—*Mostly* Herbs (*the British ones especially*), aquatics. *Leaves* various as to insertion. The stamens and pistils often separated; the former are then inserted with the petals into the base of the calyx.

1. HIPPURIS. Stam 1. Stigma 1. Fruit 1-seeded.

2. MYRIOPHYLLUM. Monœcious. Stam. 4—8. Stigmas 4. Fruit 4-seeded.

1. HIPPURIS Linn. Marc's Tail.

Perianth single, superior, forming a very indistinct rim to the germen. *Stam.* 1. *Style* 1. *Fruit* 1-celled, 1-seeded.—Named from *ἵππος*, a horse, and *οὐρα*, a tail.

1. *H. vulgáris* L. (*common M.*); leaves linear 6—8 or 10 in a whorl. *E. B.* t. 763.

Ditches and usually stagnant waters; less frequent in Scotland. 4. 6, 7.—*Stem* erect, simple, jointed. *Whorls* of about 8 leaves, which are callous at the point. *Flowers* at the base of each of the upper leaves, not unfrequently destitute of stamens. In deep streams of water this plant attains to 2 or 3 feet, with the leaves excessively crowded, 3 and even 4 inches in length, pellucid, with an opaque nerve, their points not callous; the whole plant submerged and barren.

2. MYRIOPHYLLUM Linn. Water-Milfoil.

Monœcious. *Barren fl.* *Cal.* inferior, of 4 sepals. *Pet.* 4. *Stam.* 4—8.—*Fertile fl.* *Cal.* 4-lobed. *Pet.* 4. *Stam.* 4—8, or wanting. *Stigmas* 4, sessile. *Fruit* of 4, sessile, subglobose, 1-seeded carpels, at length separating.—Name: *μυρίος*, a *myriad*, and *φύλλον*, a *leaf*; from its numerous leaves.

1. *M. verticillátum* L. (*whorled W.*); flowers all whorled subtended by pinnatifid or pectinate bracts longer than the flowers. *E. B.* t. 218. *M. pectinatum* DC.

Ponds and ditches throughout England and Wales. 4. 7, 8.—Bracteas variable in length; when many times longer than the flowers, it is *M. verticillatum* DC.; when only 2—3 times as long, it is *M. pectinatum* DC. But between these there are intermediate forms.

2. *M. spicátum* L. (*spiked W.*); flowers all whorled longer than but subtended by bracts forming an interrupted leafless spike. *E. B.* t. 83.

Ditches and stagnant waters, common. 4. 6, 7.—*Stems* slender, much branched. *Leaves* 4 in a whorl, finely pectinate and always submerged. *Spikes* slender, 3—5 inches long, erect when in bud. *Bracts* small, lower ones pectinate, upper ovate and entire. This only differs from some forms of the last by the still shorter bracteas.

3. *M. alterniflórum* DC. (*alternate-flowered W.*); sterile flowers mostly alternate on an erect leafless spike, fertile ones 1—4 in the axils of pectinated leaves at the base of the spike. *E. B. S.* t. 2854.

Ponds and ditches in many places, in England, Jersey, and Scotland. 4. 5—8.—Very near the preceding, it must be confessed, or, as it were, intermediate between it and *M. verticillatum*. Dr. Bromfield considered the leaves to be always 3 in a whorl, not 4; but they are not so represented in *E. Bot.* *Spikes* drooping when in bud.

ORD. XXX. LYTHRACEÆ Juss.

Calyx of 1 piece, free, persistent, the lobes varying in number valvate or distant in æstivation, often with intermediate

teeth. *Petals* inserted upon the calyx between its lobes, caducous, sometimes 0. *Stamens* inserted within the tube of the calyx, equal to, or double or triple the number of petals. *Ovary* 1, superior. *Style* 1; *stigma* usually capitate. *Capsule* membranous, 2—4-celled, opening longitudinally or irregularly. *Seeds* numerous, without *albumen*, on an axile placenta.—Herbs, with usually opposite leaves, without stipules: flowers axillary or racemose or spiked.—Properties astringent. *Henna* of Egypt is extracted from *Lawsonia inermis*.

1. LYTHRUM. Calyx tubular.
2. PEPLIS. Calyx campanulate.

1. LYTHRUM *Linn.* Purple-Loosestrife.

Cal. inferior, tubular, with 8—12 teeth, the alternate ones subulate. *Petals* 4—6. *Stam.* as many as, or twice as many as the petals. *Style* filiform. *Capsule* 2-celled.—Name: *λυθρον*, blood; it is said, from the red colour of the flowers.

1. *L. Salicária* L. (*spiked P.*); leaves opposite lanceolate cordate at the base, flowers in whorled leafy spikes with 12 stamens, bracts none. *E. B. t.* 1061.

Watery and marshy places, frequent. 4. 7—9.—*Stems* 2—3 ft. high, erect, 4-sided. *Spikes* very long, of beautiful purple flowers. *Cal.* striate, the subulate teeth twice as long as the others. *Pet.* oblong, cuneiform. *Stam.* 6 long and 6 short. *Style* varying in length.

2. *L. hyssopifolium* L. (*hyssop-leaved P.*); leaves mostly alternate linear-lanceolate obtuse, flowers axillary solitary, bracts 2 minute subulate, stamens about 6. *E. B. t.* 292.

Moist and occasionally inundated places, chiefly in the east of England. ☉. 6—10.—A humble annual, 4—6 inches high, with small axillary flowers. *Cal.-teeth* all short.

2. PEPLIS *Linn.* Water-Purslane.

Cal. campanulate, with 6 large and 6 alternating small teeth. *Pet.* 6, often wanting. *Stam.* 6. *Style* very short. *Caps.* 2-celled.—Named from *πεπλιον*, anciently applied to the genus *Portulaca*, now to one somewhat similar in habit.

1. *P. Pórtula* L. (*common W.*); flowers axillary solitary, leaves obovate. *E. B. t.* 1211.

Watery places, not unfrequent. ☉. 7, 8.—*Plant* prostrate, 5—6 inches long, creeping, little branched. *Leaves* opposite, glabrous, tapering at the base.

ORD. XXXI. TAMARICACEÆ *Desv.*

Calyx 4—5-partite, persistent, free, with an imbricative æstivation. *Petals* 4—5, from the base of the calyx, marcescent. *Stamens* inserted into the margin of a scutelliform disk, equal in number to the petals, or twice as many. *Ovary* superior, 1-celled. *Styles* about 3, or none. *Stigmas* 3, or united. *Capsule* 3-gonal, 3-valved, 1-celled, with many comose seeds on three placentas at the base of the cell along the middle of the valves. *Albumen* 0. — Shrubs with twiggy branches and small scale-like leaves. *Tamarix Gallica* and *Africana* yield sulphate of soda: the former, or a variety of it, also affords, according to Ehrenberg, the *manna* of Mount Sinai.

1. *TÁMARIX* *Linn.* Tamarisk.

Stam. equal, distinct. *Stigmas* distinct, sessile, feathery. *Caps.* 1-celled, 3-valved, many-seeded. *Seeds* without a beak, pappose.—Named from the *Tamarici*, a people who inhabited the banks of the Tamaris, now *Tambra*, in Spain, where the Tamarisk abounds.

1. *T. *A'nglica* *Webb* (*English T.*); leaves quite glabrous somewhat narrowed at the base, flower-buds ovate, angles of the disk 5 acute tapering into the five filaments, anthers ovate apiculate, capsule rounded at the base abruptly narrowed upwards. *T. Gallica* *Sm.*: *E. B. t.* 1318.

Rocks, cliffs, and sandy shores by the sea, about the Lizard and St. Michael's, Cornwall; Hurst Castle and Hastings. Near Landguard Fort; but evidently planted. "Planted no doubt everywhere." *Mr. Borrer. h. 7.* — *Leaves* minute, amplexicaul, adpressed, acute. *Spikes* lateral, somewhat paniced, slender, much longer than broad.

ORD. XXXII. CUCURBITACEÆ¹ *Juss.*

Frequently monœcious or diœcious. *Calyx* 5-toothed, the tube adnate with the ovary. *Corolla* 5-cleft, often scarcely distinguishable from the calyx, frequently reticulated. *Stamens* 5, often more or less cohering. *Ovary* 1-celled, inferior, with 3 parietal receptacles. *Style* short. *Stigmas* lobed *Fruit* fleshy. *Seeds* flat, in a juicy aril. *Embryo* flat. *Albumen* 0. *Cotyledons* foliaceous, veined.—*Succulent climbing plants, with extra-axillary tendrils (in the place of a stipule), frequently scabrous.* This order contains *Cucurbita*, the gourd; *Ecbalium purgans*, the elaterium, a powerful cathartic; *Cucumis*, the

¹ From the corolla being gamopetalous, this is artificially near *Caprifoliaceæ*; but it is naturally nearer *Passifloraceæ*, which has distinct petals. Some botanists consider the calyx a bractea, the corolla as the calyx, and remove this to MONOCHLAMYDEÆ.

cucumber and melons; *Citrullus Colocynthis*, the colocynth, bitter-apples, or bitter cucumber; *Lagenaria vulgaris*, bottle-gourd, &c.; all abounding in a bitter laxative.

1. *BRYONIA* Linn. Bryony.

Cor. 5-cleft. *Filaments* 3-adelphous, inserted at the base of the corolla. *Anthers* 1-celled, 3-adelphous, applied to the edge or back of the connectivum, and forming a sinuous line. *Style* trifid; *stigmas* somewhat reniform or bifid. *Fruit* ovoid or globose, baccate, few-seeded.—Named from βρωω, to shoot, or grow rapidly; in allusion to the quick growth of the stems.

1. *B. dioica* Jacq. (*red-berried B.*); leaves palmate rough on both sides, flowers diœcious. *E. B.* t. 439.

Thickets and hedges, frequent in England; not indigenous to Scotland. 2. 5—9. —*Root* very large white and branched. *Stem* long, branched, weak, with simple *tendrils*. *Flowers* in short axillary racemes. *Cor.* whitish, with green veins. *Berries* red. The plant abounds with a fetid and acrid juice.

ORD. XXXIII. PORTULACACEÆ Juss.

Sepals 2. *Petals* inserted into the base of the calyx (somewhat hypogynous), mostly 5, usually distinct, sometimes wanting. *Stamens* of uncertain number, opposite the petals when of the same number. *Ovary* superior, 1-celled. *Style* 1 or 0. *Stigmas* several. *Capsule* opening transversely or by 3 valves. *Seeds* numerous on a central receptacle. *Albumen* farinaceous, surrounded by the curved *embryo*.—*Succulent Herbs or Shrubs*. *Portulaca sativa* is the *Purslane*.

1. *MONTIA* Linn. Blinks.

Cor. of 5 irregular petals, somewhat hypogynous, united at the base into one split up in front. *Stam.* 3, inserted upon the corolla and opposite to its smaller segments. *Stigmas* 3, almost sessile. *Caps.* 3-valved, 3-seeded.—Named in honour of *Joseph de Monti*, a professor of Botany and Natural History at Bologna.

1. *M. fontána* L. (*Water B.* or *Chickweed*): *E. B.* t. 1206.

Rills, springy and wet places. ☉. 4—8. —Whole plant succulent, varying considerably in size. *Leaves* small, opposite, spatulate. *Flowers* white, at first drooping. *Seeds* 3, subreniform, dotted.

ORD. XXXIV. PARONYCHIACEÆ A. St. Hil.

Sepals 5 (rarely 3 or 4), more or less cohering at the base. *Petals* minute, alternating with the lobes of the calyx, or 0.

Stamens inserted into the base of the calyx (somewhat hypogynous), and opposite to its lobes when as many. *Ovary* superior. *Styles* 2—5. *Fruit* small, dry, 1-celled, 1—5 valved or indehiscent. *Seeds* numerous on a free central receptacle, or solitary and suspended from a long stalk arising from the base of the cell.—*Small branching* herbaceous or suffruticose plants, with *sessile entire* leaves and *membranaceous stipules*.—An order closely allied in many respects to CARYOPHYLLACEÆ, as also to AMARANTHACEÆ and CHENOPODIACEÆ, and, like these two, having frequently a single perianth.

* *Fruit 1-seeded.*

1. CORRIGIOLA. Fruit indehiscent. Petals oblong. Leaves alternate.
2. HERNIARIA. Fruit indehiscent. Sepals herbaceous flat. Petals filiform. Leaves opposite.
3. ILLECEBRUM. Fruit splitting into valves. Sepals cartilaginous, cucullate. Petals 0 or subulate. Leaves opposite.

** *Fruit a several-seeded capsule.*

4. POLYCARPON. Sepals keeled at the back, subcucullate at the apex. Petals small, narrow, emarginate. Styles 3.
5. SPERGULARIA. Sepals flat. Petals ovate, entire, as large as the calyx. Styles usually 3.
6. SPERGULA. Petals ovate, entire, as large as the calyx. Styles 5, alternate with the sepals.

1. CORRIGIOLA Linn. Strapwort.

Cal. 5-partite, permanent. *Pet.* 5, oblong, about the length of the calyx. *Stam.* 5. *Styles* 3. *Fruit* indehiscent, 1-seeded. Leaves *alternate*.—Named from *corrigia*, a *strap*, or *thong*; formerly applied to the *Polygonum aviculare* on account of its long pliant stems, and now to a plant which is somewhat similar to it in habit.

1. *C. littoralis* L. (*Sand S.*); stem leafy among the flowers. *E. B.* t. 668.

Rare; on the south-western coast of England. On Slapton sands and near the Start Point, Devon; and at Helston, Cornwall. ☉. 7, 8.—*Stems* numerous from the top of the root, spreading, slender. *Leaves* linear, obtuse, somewhat fleshy and very glaucous. *Flowers* small.

2. HERNIARIA Linn. Rupture-wort.

Cal. 5-partite, permanent. *Pet.* 5, filiform, resembling sterile stamens, and inserted with them. *Stam.* 5, inserted upon a fleshy disk. *Stigmas* 2, nearly sessile. *Fruit* indehiscent, 1-seeded. Leaves *opposite*.—Named from the plant having been supposed to be useful in the cure of *Hernia*.

1. *H. glabra* L. (*glabrous R.*); stems prostrate herbaceous

clothed with minute decurved hairs woody at the base in age, leaves oval a little tapering at the base nearly glabrous or ciliate and more or less hairy, clusters of sessile flowers axillary, calyx glabrous or with small hairs.—*a.* leaves quite glabrous. *E. B.* t. 206.—*β.* leaves ciliate and sometimes with hairs on the surface. *H. glabra β. Bab.* *H. ciliata Bab. : E. B. S. t.* 2857.

Suffolk, Cambridge, Hants, Cornwall, and in some other of the southern counties of England. Jersey and Guernsey. Western part of Kerry, Ireland. *¶.* 7, 8.—The Lizard affords both the glabrous and hairy states of this variable plant; and there is every gradation in the inflorescence between it and the *H. ciliata*. In general even the most glabrous states more resemble Mr. Babington's figure of *H. ciliata*, than Smith's figure of *H. glabra*, which represents an undeveloped form of the plant.

2. *H. *hirsúta* L. (*hairy R.*); stems herbaceous prostrate clothed with patent hairs, leaves oval oblong, clusters of sessile flowers axillary, calyx hairy. *E. B.* t. 1379?

Sandy ground near Barnet; *Hudson.* *¶.* 7, 8.—Messrs. Milne and Gordon, in their *Indigen. Bot.* i. 455, say, "We found it in a field at Finchley and Colney Hatch, near Barnet, where Hudson found it;" but as Mr. Babington has ascertained the Finchley plant to be *H. glabra*, it is also probable that Hudson's one was the hairy state of that species which is often cultivated under the name of *H. hirsuta*, and to which Smith's Cornish specimens belong. What was intended by the figure in *E. Bot.* it is difficult to say.

3. *ILLECEBRUM* Linn. Knot-grass.

Sep. 5, permanent, cartilaginous, cucullate, with an awl-shaped point at the back below the apex. *Pet.* 0, or reduced to 5 subulate scales. *Stam.* 5. *Stigmas* 2, nearly sessile. *Caps.* 1-seeded, irregularly 5- or 10-valved. Leaves *opposite*.—Name: *illecebra*, an *enticement* or *attraction*; anciently given to a showy tribe of plants, now confined to a genus possessing few charms.

1. *I. verticillátum* L. (*whorled K.*): *E. B.* t. 895.

Marshy or boggy ground in Devonshire and Cornwall. *¶.* 7. —A small plant with spreading procumbent filiform glabrous stems; broadly ovate leaves, white scariose stipules jagged at the margin; and numerous flowers in axillary whorls, the calyx of which is white, very cartilaginous, and rounded at the base.

4. *POLYCÁRPOΝ* Linn. All-seed.

Sep. 5, keeled at the back, subcucullate at the apex. *Pet.* 5, shorter than the calyx, emarginate. *Stam.* 3—5. *Styles* 3,

very short. *Caps.* 3-valved, many-seeded.—Named from *πολὺς*, *many*, and *καρπός*, *fruit*; applied sometimes by the ancients to the *Polygonum aviculare*, to which the present genus is somewhat similar.

1. *P. tetraphyllum* L. (*four-leaved A.*); triandrous, sepals mucronate, petals notched, leaves spatulate-obovate, those of the stem usually in fours, of the branches opposite. *E. B. t.* 1031.

Southern coasts of England: particularly Devonshire, Dorsetshire, Cornwall, and Glamorganshire. Jersey and Guernsey. ☉. 6, 7.

5. SPERGULARIA Pers. Sandwort-Spurrey.

Sep. 5, flattish. *Pet.* 5, ovate, entire, about as long as the calyx. *Stam.* 5—10, or fewer. *Styles* usually 3 (3—5). *Caps.* many-seeded, with entire valves fewer than the sepals or as many and alternate with them.—Named from the resemblance to the next genus.

1. *S. rubra* A. St. Hil. (*Field S.*); stems prostrate, leaves narrow-linear acute plane scarcely fleshy tipped with a short bristle, stipules ovate cloven, capsule as long as the calyx, seeds compressed angular roughish. *Arenaria L.*: *E. B. t.* 852. *Alsine Wahl.* *Lepigonum Wahl.*: *Bab.*

Gravelly or sandy soils, frequent. ☉. 6—9.—Much branched and spreading, *branches* often compressed upwards. *Stipules* a pair of ovate, acute, white, membranaceous *scales*, united at their base. *Flowers* numerous, in the axils of the upper leaves, solitary on rather short peduncles that are at length slightly bent back. *Sepals* obscurely 3-nerved, obtuse, and, as well as the peduncles, glandular and viscid.

2. *S. marina* Camb. (*Sea-side S.*); stems prostrate, leaves semicylindrical fleshy usually with a short point, stipules ovate cloven, capsule longer than the calyx, seeds compressed.—*α.* seeds mostly without a border, capsule a little longer than the calyx. *Arenaria rubra marina L.* *Lepigonum Wahl.*: *Bab.*—*β.* seeds mostly with a broad membranaceous striate border, capsule often twice as long as the calyx. *Arenaria media L.* *A. marina Sm.* (not *Oed.*): *E. B. t.* 958. *Alsine M. et K.*

Frequent upon the sea-coast. ♂ or ♀. 6—8. Longer and stouter in all its parts than the last, and with an almost woody root. *Stems* and *branches* compressed, except at the base. *Leaves* varying from obtuse, with or without a point, to acute on the same specimen. We are not sure that this is specifically distinct from the last; our *α.* is in some measure intermediate.

6. SPÉRGULA Linn. Spurrey.

Sep. 5. *Pet.* 5, as long as the calyx, ovate, entire. *Stam.* 5—10. *Styles* 5, alternate with the sepals. *Caps.* many-seeded, with entire valves opposite to the sepals.—Named from *spargo*, to scatter; from the seeds being widely dispersed.

1. *S. arvënsis* L. (*Corn S.*); leaves subulate linear sub-cylindrical, stipules minute, flowers panicle, seeds slightly compressed with a narrow margin tubercled or papillose. *E. B.* t. 1535. *S. pentandra* Sm.: *E. B.* t. 1536.

Corn fields, too frequent, especially on light stony soils. ☉. 6—8. —*Stems* 6—12 inches high or more, swollen at the joints. *Leaves* 1—2 inches long, narrow, glabrous or pubescent, in two fascicles from each node, spreading in a whorled manner, “convex above, furrowed beneath.” *Petals* white, rather longer than the calyx. *Stamens* often 5. *Seeds* never, we believe, quite smooth as Smith describes them in his *S. pentandra*. The true *S. pentandra* L. (*Arenaria flaccida* Roxb.) is said to have been formerly found in Ireland by Sherard; but this requires confirmation: it has perfectly smooth seeds and a very broad membranous striate border, but may be merely a variety of *S. arvënsis*.

ORD. XXXV. CRASSULACEÆ De Cand.

Sepals 3—20, more or less cohering at the base. *Petals* as many as the sepals sometimes cohering, inserted (as well as the stamens) at the base of the calyx (subhypogynous). *Stamens* as many as petals, or twice that number. *Ovaries* verticillate, as many as petals, each usually with a small flat scale or gland at its base, 1-celled, tapering into a stigma. *Follicles* with several seeds fixed in a double row to the ventral suture. *Albumen* fleshy thin.—Herbs or shrubs, with fleshy leaves and no stipules.

* *Stamens* as many as the petals and alternating.

1. TILLÆA. *Stamens* 3-4.

** *Stamens* twice as many as the petals or opposite to them.

2. COTYLEDON. *Petals* united into a tubular or campanulate corolla.
3. SEMPERVIVUM. *Petals* distinct or nearly so. *Hypogynous glands* lacinate, or toothed, or wanting.
4. SEDUM. *Petals* distinct. *Hypogynous glands* entire or emarginate.

1. TILLÆA Linn. Tillæa.

Cal. 3—4-partite. *Pet.* distinct, acuminate. *Stam.* 3—4. *Follicles* 2-seeded, constricted in the middle. *Hypogynous glands* obscure or wanting.—Named after Michael Angelo Tilli, an Italian botanist.

1. *T. muscosa* L. (*mossy T.*); stems branched and decumbent

at the base, flowers axillary sessile mostly 3-cleft. *E. B.* t. 116.

On moist, barren, sandy heaths, principally in Norfolk and Suffolk, Hants and Dorsetshire. ☉. 6, 7. — A minute succulent plant, scarcely 2 inches high, with small, reddish, opposite, oblong, blunt leaves. *Cal.* leaves mostly 3, bristle-pointed. *Petals* very small, almost subulate, white or tipped with rose-colour.

2. COTYLÉDON Linn. Pennywort.

Cal. 5-partite. *Pet.* united into a tubular or campanulate corolla. *Stam.* 10, inserted upon the tube of the corolla. *Follicles* many-seeded, each with a scale at its base.—Named from κοτυλη, a cup; to which the leaves of some of the species may bear a distant resemblance.

1. *C. Umbilicus* Huds. (*Wall P.*); leaves peltate crenate depressed in the centre, stem with a (usually) simple raceme of pendulous flowers, upper bracteas minute entire, corolla scarcely cleft to the middle, lobes ovate acute erect, root tuberous. *E. B.* t. 325.

Rocks, walls, and old buildings, especially in subalpine countries. ♀. 6—8.—Whole plant succulent. *Stem* from 6 inches to a foot high. *Leaves* mostly radical. *Flowers* cylindrical, yellowish-green.

[*C. lutea* Huds., *E. B.* t. 1522, having erect flowers, patulous narrow and acuminate lobes to the corolla, and toothed bracteas, is from Portugal, and must have been introduced into the British Flora by mistake. It is by no means a hardy garden-plant.]

3. SEMPERVIVUM Linn. House-leek.

Cal. 6—20-cleft. *Pet.* distinct, or slightly united at the base. *Stam.* twice as many as the petals, or as many and opposite to them. *Follicles* many-seeded; hypogynous scales laciniate, toothed or none.—Name derived from *semper*, *always*, and *vivo*, *to live*; on account of its tenacity of life.

1. *S. * tectórum* L. (*common H.*); leaves ciliate, off-sets spreading, petals about 12 entire and hairy at the margins. *E. B.* t. 1320.

House-tops and on walls. ♀. 7.—The *flowers* of this well-known and rustic medicinal but unquestionably not indigenous plant are no less beautiful than they are curious in their structure. The number of *stamens* is in reality twice as many as the petals; of which those opposite to the petals are perfect; the rest alternating, are small and abortive.

4. SÉDUM Linn. Orpine and Stonecrop.

Cal. in 4—6 deep segments, often resembling the leaves. *Pet.* 4—6, distinct, patent. *Stam.* 8—12. *Follicles* many-

seeded, each with an entire or emarginate scale at its base.—Named from *sedo*, to *sit*; from these plants being seated on their native rocks with little or no earth.

* *Leaves plane. Root thick.*

1. *S. Rhodiola* DC. (*Rose-root S.*); leaves obovate-oblong plane toothed glabrous, flowers (yellow) diœcious, stamens 8, ovaries 4, hypogynous scales emarginate as long as broad. *Rhodiola rosea* L.: *E. B.* t. 508.

Wet rocks, on the high mountains of the north of England and Ireland, and in Scotland, abundant; likewise on cliffs by the seashore. 4. 6, 7.—*Root* large, woody, when dry yielding a smell that has been compared to that of *Roses*. *Stem* 6—13 inches high, simple.

2. *S. Téléphium* L. (*Live-long, or O.*); leaves oval-oblong often cuneate at the base plane serrate, cymes corymbose leafy dense, stems erect, flowers (purple) perfect, stamens 10.—*a.* upper leaves rounded at the base sessile. *E. B.* t. 1319.—*β.* all the leaves attenuated at the base. *S. purpurascens* Link. *S. purpureum* Tausch. *S. Fabaria* Koch.

Borders of fields, hedge-banks, and waste places among bushes. 4. 7, 8.—*Stems* 1—2 feet high, spotted. Our British specimens, especially from the North, belong principally to *β.*

** *Leaves subterete. Flowers white or reddish.*

3. *S. dasyphyllum* L. (*thick-leaved S.*); leaves opposite (except on the flowering stems) ovato-globose gibbous fleshy, cymes small glandular pubescent, petals ovate obtuse. *E. B.* t. 656.

Walls and rocks, in several parts of England. Conway, Wales. Collington woods near Edinburgh (scarcely indigenous). Cork. 4. 6, 7.—*Sterile stems* slender, procumbent below, slightly viscid; flowering stems also procumbent, 2—3 inches high. *Leaves* short, singularly thick and fleshy, glaucous with a reddish tinge and dotted, *Flowers* white tinged with rose-colour. *Petals* and *pistils* 5—8.

4. *S. A'nglicum* Huds. (*English S.*); leaves mostly alternate ovate gibbous fleshy produced at the base, cymes glabrous bifid few-flowered, petals very sharp at the point. *E. B.* t. 171.

Rocky places, especially near the sea; most abundant in North Wales, west of Scotland, and in Ireland. ☉. 6—8.—*Stems* 2—3 inches high, much branched, both flowering and sterile ones procumbent below. *Leaves* glaucous-green often tinged with red. *Flowers* white, star-like with purple *anthers*.

5. *S. *album* L. (*white S.*); leaves scattered oblong-cylindrical obtuse spreading, cyme much branched glabrous, petals lanceolate.—*a.* leaves flattened above. *E. B.* t. 1578.—*β.* leaves flattened on both sides.

Rocks, walls, and roofs of houses; in the counties of Middlesex, Worcester, Suffolk, Somerset, Warwick, and Northampton. Forfar and Glamis, Scotland. \mathcal{U} . 7, 8.—*Stems* prostrate below, the flowering-stem only erect, 3—5 inches high. *Leaves* pale glaucous-green, sometimes tinged with red. *Flowers* crowded white or tinged with rose-colour.

6. *S. villósum* L. (*hairy S.*); leaves scattered linear flattened above, and as well as the peduncles and erect stems glandular pubescent, petals ovate acute. *E. B.* t. 394.

Stony and moist places by the sides of rills; frequent in the N. of England and Scotland, especially the subalpine parts. \odot or δ ? 6, 7.—*Stem* 3—4 inches high, reddish purple. *Leaves* on the short barren shoots almost exactly cylindrical. *Flowers* few, of a pale rose-colour.

*** *Leaves subterete. Flowers yellow.*

7. *S. ácre* L. (*biting S.*, or *Wall-pepper*); leaves erect alternate ovate gibbous fleshy produced at the base, cymes trifid glabrous leafy, sepals obtuse gibbous at the base, petals acute. *E. B.* t. 839.

Walls, rocks, and sandy ground, frequent. \mathcal{U} . 6, 7.—Distinguished among our yellow-flowered species, by its upright short and very succulent *leaves*, closely imbricated on the barren shoots. Very biting when chewed, and hence its name of *Wall-pepper*.

8. *S. *sexanguláre* L. (*tasteless yellow S.*); leaves generally in 6 rows whorled on the barren shoots cylindrical fleshy spreading produced at the base, cymes trifid glabrous, sepals lanceolate acute not gibbous, petals acute. *E. B.* t. 1946.

Old walls in the east of England, rare. Isle of Sheppey; Greenwich Park; Cambridgeshire; at Old Sarum, Yorkshire. \mathcal{U} . 7.—Well distinguished from the last by its spreading, larger and slender *leaves*, and by their insertion.

9. *S. *refléxum* L. (*crooked yellow S.*); leaves terete awl-shaped scattered spurred at the base, flowers cymose, segments of the calyx lanceolate slightly acute. *E. B.* t. 695.—*S. glaucum* Donn. *E. B.* t. 2477.

Walls, roofs of houses and thatched buildings, frequent. \mathcal{U} . 7, 8.—Sterile *branches* with thickly placed *leaves*, often reflexed. *Flowering-stems* 6—8 inches high. *Cyme* large yellow. *Flowers* numerous often with 6 *petals* and 12 *stamens*. Very similar to the two following species. If the true *S. glaucum* (described as having the leaves more slender, glaucous, and not recurved) be distinct from this, even as a variety, it has not come under our observation: it is said to grow on rough hills near Mildenhall, Suffolk, and Sunday's Well and Glaskeen, Ireland.

10. *S. rupéstre* L. (*St. Vincent's-Rock S.*); leaves linear-lanceolate flattened glaucous produced at the base, those of the

sterile branches closely imbricated adpressed, cymes nearly level-topped, segments of the calyx elliptical obtuse. *E. B.* t. 170. *S. elegans* *Lej.*

St. Vincent and Cheddar rocks, Somersetshire. Barmouth, Tremadoc, and Ormeshead, Wales. Walls about Darlington, Yorkshire. 4. 6, 7. Too near, we fear, to the last.

11. *S. Forsterianum* Sm. (*Welsh Rock S.*); leaves lanceolate flattened produced at the base, those of the sterile branches spreading in many rows, cymes compact round-topped, segments of the calyx elliptical obtuse. *E. B.* t. 1802.

Rocks in the spray of waterfalls, Wales. Rhydoll, Cardiganshire; Barmouth; Hisvæ, valley of Nant-phrancon; Little Ormeshead, Caer-Cardoc, Shropshire. 4. 6, 7.—This seems chiefly to differ from the last by the leaves on the sterile branches spreading and forming small rose-like tufts, and by the slightly different form of the cymes; characters not of primary importance. In the whole genus the inflorescence is definite, and consequently forms a cyme, although sometimes with the appearance of a corymb or panicle.

ORD. XXXVI. GROSSULARIACEÆ *De Cand.*

Calyx 4—5-cleft, the tube entirely or in part adnate with the ovary. *Petals* 4—5, small, placed at the mouth of the tube alternately with the 4—5 short *stamens*. *Ovary* 1-celled, with two opposite parietal placentas which are sometimes projected into the interior and resemble dissepiments. *Ovules* many. *Style* 2—4-cleft. *Berry* crowned with the remains of the calyx. *Seeds* suspended by long stalks among the pulp. *Albumen* horny.—Shrubs, often spiny, of temperate climates, with alternate lobed leaves.

1. *RIBES* *Linn.* Currant and Gooseberry.

Petals small, scale-like. *Stam.* included or nearly so. (*Style* erect, and *ovary* with nerve-like *placentas* in all the British species.)—Name: *Ribes* was a word applied by the Arabian physicians to a species of *rhubarb*, *Rheum Ribes*; our older botanists believed that it was our gooseberry, and hence Bauhin called that plant *Ribes acidum*.

* *Flowers* racemose or spicate. *Spines* none.

1. *R. rubrum* L. (common or red C.); flowers perfect, leaves bluntly 5-lobed, bracteas very small, calyx nearly plane and ovary glabrous, petals obtuse.—*a.* racemes glabrous pendulous. *E. B.* t. 1289.—*β.* racemes slightly downy, erect in flower, pendulous in fruit. *R. petraeum* Sm. (not *Wulf.*): *E. B.* t. 705.—*γ.* racemes spicate, erect in flower and fruit. *R. spicatum* *Rob.*: *E. B.* t. 1290.

Woods and hedges, but scarcely wild.— β . N. of England, and in Scotland.— γ . near Richmond, Yorkshire. h . 4, 5.—*Leaves* doubly serrate, on longish stalks. *Limb* of the *calyx* shorter than the spreading roundish segments. *Petals* distinct from each other, cuneiform-orbicular. *Stamens* inserted into the throat of the calyx; *anthers* reniform. *Style* cylindrical; *stigmas* subglobose.

2. *R. alpinum* L. (*tasteless Mountain C.*); diœcious, branches angled, leaves shining beneath, racemes glandular erect both in flower and fruit, flowers shorter than the bractœas, limb of the calyx nearly plane. *E. B.* t. 704.

Woods in the N. of England. Scarcely wild in Scotland. h . 4, 5.—*Leaves* small frequently 3-lobed; lobes acute, deeply serrate. *Racemes* with a few small flowers. *Cal.*-limb nearly flat shorter than the spreading segments. *Petals* distant. *Stamens* inserted into the throat of the calyx. *Style* cylindrical, bifid at the apex; *stigmas* subglobose. *Berries* red, few-seeded.

3. *R. nigrum* L. (*black C.*); flowers perfect, leaves dotted with glands beneath, racemes lax downy pendulous with a separate simple flower-stalk at their base, limb of the calyx campanulate pubescent. *E. B.* t. 1291.

Woods and river-sides, in various situations, but probably introduced. h . 4, 5.—*Inflorescence* glandular. Segments of the *calyx* revolute as long as the tubular portion of its limb. *Petals* imbricated at the margins. *Stamens* inserted upon the tube; *anthers* cordate-oblong, apiculate. *Ovary* half-superior. *Style* almost entire; *stigmas* somewhat reniform. *Berries* the largest of our currants, black, much esteemed medicinally and for making jelly.

** *Peduncles* 1—3-flowered. *Stems* spiny.

4. *R. Grossulária* L. (*common G.*); leaves rounded and lobed, peduncles short hairy 1—3-flowered with a pair of minute bractœas. *E. B.* t. 1292. *R. Uva-crispa* L.: *E. B.* t. 2057.

Hedges and thickets, but scarcely indigenous. h . 4, 5.—*Branches* not setose. *Thorns* immediately beneath a fascicle of leaves, solitary or 2—3 combined at the base, spreading. *Limb* of the *calyx* campanulate, about as long as the reflexed segments. *Petals* ovate, distant half as long as the stamens. *Stamens* inserted into the bearded throat of the calyx, and shorter than the segments. *Style* cleft to the middle, below which it is very hairy; *stigmas* minute, truncate.

ORD. XXXVII. SAXIFRAGACEÆ Juss.

Calyx of 4—5 sepals, or united into a tube which is wholly or in part adnate with the ovary. *Petals* 4—5, or 0. *Stamens* 5—10, distinct, perigynous or somewhat hypogynous. *Ovary* with usually two diverging persistent styles, 2-celled with an

axile *placenta*, or 1-celled with parietal *placentas*. *Capsule* 2-valved. *Seeds* numerous. *Albumen* fleshy.—*Small*, mostly herbaceous plants, *frequent in northern and alpine regions*.

1. SAXIFRAGA. Petals 5, ovary 2-celled.

2. CHRYSOSPLENIUM. Petals 0, ovary 1-celled.

1 SAXIFRAGA Linn. Saxifrage.

Cal. superior, or inferior, or half-inferior, in 5 segments. *Pet.* 5 *Stam.* 10 or sometimes 5. *Ovary* 2-celled. *Caps.* with 2 beaks, 2-celled, many-seeded. — Named from *saxum*, a stone, and *frango*, to break; in allusion to the supposed medicinal virtues of this plant; or, perhaps, to its roots penetrating the crevices of rocks, among which the different species generally grow.

* *Flowering-stems* erect, leafless. *Flowers* panicled. *Cal.* usually reflexed. *Caps.* superior or nearly so.

† *Filaments* enlarged upwards.

1. *S. Géum* L. (*Kidney-shaped S.*); leaves rotundate-reniform crenate or sharply toothed, footstalks hairy linear convex beneath channelled above, scape panicled, capsules superior. — *a.* leaves hairy on both sides. *E. B. S. t.* 2893. — *β.* leaves glabrous on both sides. *E. B. t.* 1561.

Mountains in the south-west of Ireland. 4. 6.—This species has the margin of the teeth cartilaginous, but less so than the following. Our *a.* has the leaves hairy and sharply toothed; but they vary much in these respects and in size. Between this and the next there are several intermediate forms about Killarney, not quite agreeing with either, two of which may be noticed—1. *S. elegans* Mackay (*E. B. S. t.* 2892.), leaves round and approaching in form to *S. Geum*, but with the petiole shorter and broader, and although convex beneath, it is flat above as in *S. umbrosa*. Turk Mountain and Connor Hill.—2. *S. hirsuta* L. (*E. B. t.* 2322.); leaves deep green slightly hairy oval longer than broad scarcely cordate at the base, and the petiole as in *S. Geum*. Gap of Dunloe, Connor Hill, and Hungry Hill. Whether these ought to be considered as varieties of the present species, or as hybrids between the two, or as intermediate states uniting them into one, or as distinct species from both, requires more observations than can be made from specimens obtained from only a few stations, and these all confined to one country.

2. *S. umbrósa* L. (*London-Pride*, or *None-so-pretty*); leaves roundish oval with cartilaginous crenatures sharp teeth or serratures tapering gradually into a broad flat footstalk, scape panicled, capsule superior. — *a.* leaves obovate-oblong crenate or toothed spreading. *E. B. t.* 663. — *β.* leaves roundish sharply

toothed erect. *S. punctata* Haw. (not *L.*)— γ . leaves oblong-ovate erect with deep tooth-like serratures. *E. B. S.* t. 2891.

Plentiful on mountains in south and west of Ireland. Woods at Wetherby, and in Craven, Yorkshire, and about Edinburgh and Glasgow, but not really wild. γ . 6.—The usual form of this species has the leaves glabrous, longer than broad, with the teeth either blunt, or short and acute; in γ . the teeth are long, and in β . the leaves are often as short as in *S. Geum*.

†† *Filaments subulate.*

[3. *S. Andréwsii* Harv. (*Andrews' S.*); leaves spreading spatulate obtuse glabrous thickish narrowed into the slightly ciliated petiole crenate with a thin membranaceous margin, scape panicle. *Lond. Journ. Bot.* vii. p. 570. t. 19.

Moist cliffs, on a mountain at the extreme termination of Glen Caragh, Kerry. *W. Andrews, Esq.* γ . 6.—Of this we have abridged Dr. Harvey's specific character, having only seen one or two garden specimens: from what we have learned, however, this supposed species is a hybrid between *S. umbrosa* and *S. ligulata*, raised in the Dublin Botanic Gardens; and consequently there must be a mistake in assigning to it the above station.]

4. *S. stelláris* L. (*starry S.*); leaves oblong-cuneiform scarcely stalked, panicle subcorymbose of few flowers, capsule superior.— α . leaves angulato-serrate. *E. B.* t. 167.— β . leaves quite entire.

Sides of rivulets and wet rocks, in the mountainous parts of the north of England, Scotland and Ireland.— β . rocks on Ben Nevis. γ . 7, 8.

** *Flowering stem erect. Leaves not lobed. Flowers capitate. Cal. spreading. Caps. $\frac{1}{2}$ -inferior.*

5. *S. nivális* L. (*alpine clustered S.*); leaves obovate subpetiolate acutely erenate subcoriaceous, scape terminated by a dense cluster of flowers. *E. B.* t. 440.

Mountains of Wales, and frequent in the rocky cliffs of the Highland mountains of Scotland. γ . 7, 8—*Leaves* subcoriaceous, glabrous above. *Scape* glandular-pubescent, sometimes a little branched.

*** *Stems all procumbent and leafy. Leaves undivided.*

6. *S. oppositifolia* L. (*purple Mountain S.*); leaves ovate opposite imbricated ciliate, flowers solitary terminal. *E. B.* t. 9.

Moist alpine rocks. Yorkshire. Snowdon and other Welsh mountains. Frequent on the Highland mountains of Scotland. γ . 4, 5.—Grows in straggling tufts, with a habit quite different from that of any other British *Saxifrage*. *Flowers* large in proportion to the size of the plant, purple, very beautiful. The *leaves* are retuse, ciliate, and have a pore at the extremity. *Capsule* half-inferior.

**** *Flowering-stem leafy, erect or spreading. Leaves all entire.*

7. *S. Hirculus* L. (*yellow Marsh S.*); stem erect, leaves alternate lanceolate, those from the root attenuated into a petiole, calyx inferior at length reflexed obtuse downy at the margin as well as the upper part of the stem. *E. B. t. 1009.*

Wet moors, very rare. Knutsford, Cheshire; Cotherstone-fell, Yorkshire. Langton, Berwickshire; Walston, Lanarkshire. Queen's County, Ireland. 4. 8. — *Flowers* yellow, large, solitary. *Petals* almost elliptical.

8. *S. aizoides* L. (*yellow Mountain S.*); lower leaves of the stem numerous crowded, the rest scattered linear-lanceolate fleshy more or less ciliate, stem branched ascending, calyx spreading, capsule half-superior. *E. B. t. 39.*

Abundant near alpine rills, and in springy places in mountainous countries; north of England, Wales, Scotland, and Ireland. 4. 6—9. — *Stem* 5—7 inches high, branching below. *Flowers* panicle, subcorymbose, bright yellow; each *petal* beautifully spotted with orange.

***** *Flowering-stems erect or spreading, more or less leafy. Leaves (some or all) lobed. Calyx spreading.*

9. *S. granulata* L. (*white Meadow S.*); granulated underground, radical leaves reniform on long foot-stalks obtusely lobed, those of the upper part of the stem nearly sessile acutely lobed, stem panicle, capsule partly inferior. *E. B. t. 500.*

Hedge-banks, meadows, and pastures, especially on a gravelly soil. In many parts of the south and middle of Scotland, but scarcely known in the Highlands. Between Baldoyle and Portmarnock, Ireland. 4. 5, 6. — *Stem* 8—12 inches high, glandulose-pilose, with numerous, small, clustered *tubers* under ground. *Leaves* mostly radical, glabrous; *petioles* glandular. *Flowers* large, white.

10. *S. cernua* L. (*drooping bulbous S.*); radical leaves reniform on long foot-stalks palmate-lobate, superior ones nearly sessile subtrifid, stem bulbiferous usually simple with one terminal flower, capsule superior. *E. B. t. 664.*

Rocks on the summit of Ben Lawers. 4. 8. — *Stem* 3—4 or 5 inches high, slender. *Leaves* glabrous, and the *stem*, which droops at the extremity, nearly so. In the axils of the small upper *leaves* are clusters of minute reddish *bulbs* or rather *tubers*. We have never seen native specimens of this in fruit.

11. *S. rivularis* L. (*alpine Brook S.*); leaves 3—5-lobed palmate glabrous on long stalks, stem slender branched pubescent, branches few-flowered, bracteas oblong sessile 3-lobed and entire, capsule half-inferior. *E. B. t. 2275.*

Moist alpine rocks in Scotland, rare. Near the summit of Ben Nevis, and Ben Lawers, but very scarce. Plentiful on Loch-na-gar, Aberdeenshire. 4. 8

12. *S. tridactylites* L. (*Rue-leaved S.*); glandular and viscid, leaves cuneate 3—5-fid, the uppermost bracteas undivided, stem paniced, pedicels single-flowered, capsule inferior. *E. B.* t. 501.

Common on walls and dry barren ground, in England and the Lowlands of Scotland; rare however in the west of Scotland, and especially in the Highlands. ☉. 4—7.—*Stem* 2—4 inches high. Whole plant covered with viscid hairs. *Petals* small, pure white, scarcely longer than the segments of the calyx. *Capsule* almost wholly inferior.

13. *S. hypnoides* L. (*mossy S.*); sterile shoots usually procumbent and elongated, root-leaves 3-cleft, those of the shoots undivided or 3-cleft bristle-pointed or acute and more or less fringed, segments of the calyx pointed. — *a.* leaves of the procumbent shoots undivided or 3-cleft, segments narrow, sepals ovate, petals ovate. *E. B.* t. 454. *S. platypetala* *E. B.* t. 2276. *S. denudata* *Don.*—*β.* leaves of shoots mostly 3-cleft, segments linear, sepals subulate, petals oblong. *S. affinis* *Don*: *E. B. S.* t. 2903.—*γ.* leaves of shoots mostly 3-cleft, segments linear, sepals lanceolate mucronate, petals spatulate. *S. latevirens* *Don.*—*δ.* leaves of shoots mostly 3-cleft, segments lanceolate, sepals ovate, petals ovate. *S. elongella* *Sm.*: *E. B.* t. 2277. — *ε.* leaves of shoots mostly 3-cleft, segments lanceolate, sepals ovate, petals obovate. *S. hirta* *Don.*: *E. B.* t. 2291.

Frequent in rocky mountainous situations in England, Scotland, and Ireland. 4. 5—7.—Sepals and petals being merely modified leaves, their shape may be expected to vary in accordance with the foliage; so that the above characters, however constant in particular localities, cannot be depended on for the distinction of the above varieties into species, although they may suffice to indicate the different aspects of this abundant and variable plant. We hesitate whether to refer *S. incurvifolia* of *Don* here or to the next; one cultivated specimen having the lobes of the leaves mucronate, and another quite obtuse, yet not otherwise distinguishable.

14. *S. cæspitosa* L.? (*tufted alpine S.*); sterile shoots usually very short or wanting, root-leaves crowded fringed 3—5-cleft with obtuse lobes lowermost sometimes undivided, calyx-segments obtuse, fruit hemispherical.—*a.* smaller, without sterile shoots. *E. B.* t. 794.—*β.* larger. *S. decipiens* *Ehrh.* *S. palmata* *Sm.*: *E. B.* t. 455. *S. incurvifolia* *E. B. S.* t. 2909.

Mountains, rare. Rocks of Twll dû, and Cwm-Idwell, N. Wales. Brandon, co. Kerry. Ben-na-bourd, Aberdeenshire; Ben Nevis. 4. 5—7.—We fear that the British species is only a variety of the last with obtuse lobes to the leaves. In the Lapland, Norway, and

Arctic American plants (see Gunner *Norv.* ii. t. 7. f. 1, 3, 4, which is also *S. Grœnlandica* L.), the calyx when in fruit is of a different form; and the leaves, which are almost glabrous on the surface, are never ciliate with short glandular hairs.

15. *S. *muscoïdes* Wulf. (*mossy alpine S.*); sterile shoots very short erect, radical leaves crowded linear obtuse entire and trifid, stem nearly naked few-flowered, petals oblong obtuse (buff-coloured) a little longer than the superior calyx. *E. B.* t. 2314.

Mountains above Ambleside, Westmoreland? *Huds.* Highlands of Scotland? 4. 5.—A very dubious native, the only authority being cultivated plants said to have been originally brought from Scotland: the plant from Westmoreland is supposed to have been *S. hypnoides*.

16. *S. *geranoïdes* L. (*Geranium S.*); sterile shoots short, leaves glandular-pubescent thickish scarcely rigid, lower ones and those of the shoots upon very long foot-stalks deeply 3-cleft, the segments usually 3-lobed and incise sometimes 2-lobed or entire, lobes acute, panicle cymose, segments of the superior calyx linear or linear-lanceolate longer than the germen. *S. pedatifida Ehrh.*: *E. B.* t. 2278.

Said to have been found in the "Scottish mountains" by Mr. J. T. Mackay; and on "rocks near the head of Clova, Angusshire," by Mr. G. Don. "Isle of Achill, Ireland." Mr. Wyne. 4. 6, 7.—There seems to be a mistake as to the supposed discovery of this plant in Scotland, a mistake the more probable from its being supposed distinct from *S. geranoïdes*.

2. CHRYSOSPLÉNÍUM Linn. Golden-Saxifrage.

Cal. superior, 4—5-cleft, somewhat coloured. *Cor.* 0. *Stam.* 8—10. *Ovary* 1-celled. *Capsule* 1-celled with 2 beaks, many-seeded. — Named from χρυσος, gold, and σπλην, the spleen, or a medicine for the spleen; a disease, for which this plant was supposed to be a cure.

1. *C. alternifólium* L. (*alternate-leaved G.*); leaves alternate, lower ones subreniform upon very long foot-stalks. *E. B.* t. 54.

Boggy places among rocks and springs, rather rare in England, more frequent in Scotland. Near Belfast, Ireland. 4. 4—6.—*Stem* 4—5 inches high, branched near the summit. *Leaves* petiolate, crenate. *Flowers* in small umbels, deep yellow, mostly with 8 stamens.

2. *C. oppositifólium* L. (*common G.*); leaves opposite cordate-rotundate. *E. B.* t. 490.

Sides of rivulets in shady places, common. Abundant near the source of rivulets in very alpine situations, in the Highlands. 4. 4—7.—Generally more branched at the base than the last, and of a paler colour in all its parts. *Stamens* usually 8.

ORD. XXXVIII. UMBELLIFERÆ¹ *Juss.*

(See Tabs. I.—III.)

Calyx adherent with the *ovary*, 5-toothed; teeth minute, often obsolete. *Corolla* of 5 *petals*, sometimes very unequal, the outer ones the largest. *Stamens* 5, alternate with the petals, inserted on the under side of a thick fleshy disk, at the base of the styles. *Styles* 2. *Achenes* or *carpels* 2, combined, attached near the apex to a central axis, usually separating when ripe. *Seed* solitary, pendulous. *Embryo* minute, in the base of a horny *albumen*.—Herbs. Leaves *alternate generally compound and embracing the stem with their sheathing bases*. Flowers in *umbels*.—This order contains many poisonous plants, especially such species as grow in watery places; numerous esculent and aromatic ones, usually inhabiting dry situations. Several yield gum-resins; as *assafœtida*, *galbanum*, and *ammoniac*, but the plants themselves are not well ascertained.

I. Umbels simple or imperfectly compound.²* *Vittæ* 0. *Albumen* solid.

1. HYDROCOTYLE. Fruit flat, of two nearly orbicular carpels, naked. Calyx-teeth obsolete.
2. SANICULA. Fruit roundish, without ribs, densely clothed with hooked prickles. Calyx-teeth leafy.
- 2^a. ASTRANTIA. Fruit roundish, with plicate dentate ribs. Calyx-teeth leafy.
3. ERYNGIUM. Fruit roundish, without ribs, densely clothed with chaffy scales. Calyx-teeth leafy.

** *Fruit with vittæ. Albumen furrowed or involute at the suture.*

39. TORILIS.

¹ In this extensive, important, and perfectly natural group, the genera which compose it are with difficulty distinguished the one from the other. The parts on which the marks of distinction depend are minute; and in vain will the student hope to make himself master of the subject without devoting his earnest attention to it, and carefully examining the structure of the flowers, and more especially of the fruit. This latter consists of two single-seeded indehiscent *pericarps* or *carpels*, as they may be conveniently called, eventually separating, each with its style, and for a time suspended by a central, filiform, and generally bipartite *axis*, or *carpopore* (Tab. I. f. 11. a, and Tab. III. f. 33. a). They are variously shaped, and marked with longitudinal *ribs* or *ridges*. The number of these ribs upon each *carpel* is five (Tab. I. f. 6. a, b, &c.), more or less apparent, sometimes obliterated. Within the coat of the carpels, generally in the *interstices* between the ribs, are often longitudinal ducts, or canals, called *vittæ* (Tab. I. f. 13. b), replete with an oily or resinous substance, and usually coloured; so that they are sometimes visible without dissection (Tab. II. f. 27. a, b). The *albumen* is either *furrowed* (Tab. III. f. 34. c, 36. b, &c.), or *involute* on its inner face or suture (Tab. III. f. 32. b, 33. b, 38. &c.), or neither, when it is said to be *solid* (Tab. I. f. 4. b, 5. c, &c.).

² The fruits of all the genera are represented in Tabs. I.—III., the numbers of the genera indicating the figures in these plates.

II. Umbels compound or perfect.

1. (A—F.) *Fruit not prickly.** *Albumen solid.*A. *Fruit laterally compressed.*† *Leaves compound.*‡ *Calyx-teeth foliaceous.*4. CICUTA. *Fruit roundish-cordate.*‡‡ *Calyx-teeth small or obsolete. Petals entire, with a straight or inflexed point.*5. APIUM. *Involucel 0. Fruit didymous: carpels with single vittæ between the ribs.*6. PETROSELINUM. *Involucel many-leaved. Fruit ovate: carpels with single vittæ between the ribs; carpophore bipartite.*7. HELOSCIADIUM. *Involucel many-leaved. Fruit ovate or oblong: carpels with single vittæ between the ribs; carpophore entire.*8. TRINIA. *Carpels with single vittæ beneath each rib. Flowers dicecious.*‡‡‡ *Calyx-teeth small or obsolete. Petals obcordate or emarginate, with an inflexed point.*|| *Fruit with single short clavate vittæ between the ribs.*9. SISON. *Fruit ovate.*|||| *Vittæ 0.*10. ÆGOPodium. *Fruit oblong.*||||| *Vittæ elongated, linear.*11. CARUM. *Fruit oblong: vittæ single between the ribs.*12. BUNium. *Fruit oblong: vittæ 2—3 between the obtuse ribs: suture without vittæ.*13. PIMPINELLA. *Fruit ovate: vittæ 3 or more between the slender ribs: suture with vittæ. Styles with a swollen base.*14. SIUM. *Fruit ovate or globose: vittæ 3 or more between the obtuse ribs: suture with vittæ. Styles with a depressed base.*†† *Leaves simple (reduced to the petiole).*15. BUPLEURUM. *Calyx-teeth obsolete. Petals roundish entire, with an involute broad point. Fruit ovate-oblong.*B. *Fruit ovate or elliptical, rounded or slightly dorsally compressed; carpels separating, with vittæ.*† *Vittæ single between the ribs.*16. CENANTHE. *Styles long, erect. Carpels with blunt ribs and single vittæ between them.*17. ÆTHUSA. *Styles short. Fruit shortly ovate. Involucre few-leaved. Petals obcordate.*

18. FENICULUM. Styles short. Fruit oblong. Involucre 0. Petals entire.
19. SESELL. Styles long, reflexed. Fruit ovate. Involucre many-leaved. Petals obcordate.

†† *Vittæ 2 or more between the ribs. (Involucre many-leaved.)*

‡ *Seeds without vittæ.*

20. LIGUSTICUM. Petals obcordate, with an inflexed point, shortly clawed.
21. SILAUS. Petals obovate or emarginate, with an inflexed point, sessile or with an appendage at the base.
22. MEUM. Petals entire, elliptical, with an incurved point.

†† *Seeds with many vittæ, loose from the carpel.*

23. CRITHMUM. Petals roundish, entire, involute.

C. Fruit much and dorsally compressed.

24. ANGELICA. Fruit with 2 wings on each side: ribs equidistant; lateral ones expanding into the wings.
25. PEUCEDANUM. Fruit with one even wing on each side: ribs equidistant; lateral ones obsolete close to the wings: vittæ filiform. Petals with an inflexed point.
26. PASTINACA. Fruit with one even wing on each side: lateral ribs distant, upon the wings: vittæ filiform. Petals involute.
27. HERACLEUM. Fruit with one even wing on each side: lateral ribs distant, upon the wings: vittæ clavate, short. Petals with an inflexed point.
28. TORDYLIUM. Fruit with one wing on each side, which is thick and crenate at the margin.

D. Fruit globose; carpels scarcely separating.

29. CORIANDRUM. Vittæ none.

** *Albumen furrowed or involute at the suture.*

E. Fruit short, turgid, slightly compressed laterally.

30. CONIUM. Vittæ 0 between the waved crenate ribs. Albumen furrowed.
31. PHYSOSPERMUM. Vittæ single between the filiform ribs. Albumen furrowed.
32. SMYRNIUM. Vittæ several between the ribs. Albumen involute.

F. Fruit oblong.

† *Fruit with a conspicuous beak. Vittæ none.*

33. SCANDIX. Beak very long: carpels with 5 obtuse ribs.
34. ANTHRISCUS. Beak rather short: carpels without ribs.

†† *Fruit with a very short beak, or without one.*

35. CHÆROPHYLLUM. Carpels obtusely 5-ribbed, with single vittæ between the ribs.
36. MYRRHIS. Carpels sharply 5-ribbed, without vittæ.

2. (G.) *Fruit prickly, or with a prickly involucre.*

† *Carpels with 3 dorsal primary bristly ribs, and prickles between them.*

37. DAUCUS. Albumen solid. Fruit dorsally compressed, with prominent ribs.

38. CAUCALIS. Albumen involute at the suture. Fruit slightly compressed laterally, with prominent (secondary) ribs.

39. TORILIS. Albumen furrowed. Fruit slightly compressed laterally, without evident ribs.

†† *Carpels each with 5 dorsal depressed smooth ribs. Involucre prickly.*

40. ECHINOPHORA. Albumen involute.

I. *Umbels simple or imperfectly compound. Fruit without vittæ. Albumen solid. (Gen. 1—3.)*

* *Fruit laterally compressed.*

1. HYDROCÓTYLE Linn. White-rot. (Tab. I. f. 1.)

Fruit of 2 flat orbicular carpels, each with 5, more or less distinct, filiform ribs. Cal.-teeth obsolete. Pet. ovate. (Leaves simple.)—Named from *ὕδωρ*, *water*, and *κοτύλη*, a *cup* or *vase*; the common species growing in wet places, and having orbicular leaves depressed in the middle and stalked in the centre.

1. *H. vulgáris* L. (*common W.*, or *Marsh-Pennywort*): leaves pettate orbicular somewhat lobed and crenate, heads of about 5 flowers. *E. B. t. 751.*

Bogs, marshes, and banks of lakes, frequent. 4. 5—8.—*Stems* creeping, producing from their joints petiolate *leaves* and simple *flower-stalks*, which are much shorter than the petioles. *Flowers* often with a reddish tinge. *Fruit* emarginate at the base.

** *Transverse section of fruit nearly round.*

2. SANÍCULA Linn. Sanicle. (Tab. I. f. 2.)

Fruit ovate, densely clothed with hooked prickles. *Cal.-teeth* leafy. *Pet.* erect, obovate, with long inflected points. (*Some flowers abortive.*)—Name derived from *sano*, to *heal*; because this plant was once supposed "to make whole and sound all inward hurts and outward wounds."

1. *S. Europæa* L. (*Wood S.*); lower leaves palmate with the lobes trifid inciso-serrate, fertile flowers all sessile. *E. B. t. 98.*

Woods and thickets, frequent. 4. 6, 7.—*Leaves* mostly radical, finely serrate, almost ciliate. *Heads of flowers* small, white; there are often sterile flowers which are shortly stalked.

[*Astrantia major* L., observed in one or two places, has no claim to be considered a native.]

3. ERYNGIUM Linn. Eryngo. (Tab. I. f. 3.)

Fruit ovate, clothed with chaffy scales or bristles. *Cal.-teeth* leafy. *Pet.* erect, oblong, with long inflected points. (Involucre of many leaves. Flowers in a compact head upon a scaly receptacle.)—Name: *εργυγιον* of Dioscorides.

1. *E. maritimum* L. (*Sea E.* or *Sea-Holly*); radical leaves roundish plaited spinous stalked, upper ones lobed palmate amplexicaul rigid, involucreal leaves 3-lobed longer than the heads, scales of the receptacle 3-cleft. *E. B.* t. 718.

Sandy shores of England, frequent. Scotland, chiefly on the west coast. 4. 7, 8.—Whole plant stiff and rigid, glaucous. *Leaves* and *involucres* beautifully veiny. *Flowers* blue, in dense heads, not having at first sight the appearance of those of this Order. The roots are well tasted, when candied, and have been considered stimulating and restorative.

2. *E. campéstre* L. (*Field E.*); radical leaves subternate, lobes pinnatifid, cauline ones bipinnatifid amplexicaul all with spinous teeth, involucreal leaves lanceolate spinous longer than the heads, scales of the receptacle undivided. *E. B.* t. 57.

Very rare. Devil's Point, Stonehouse, near Plymouth (now nearly extinct); near Daventry (extinct); at the eastern extremity of Jarrow ballast-hills, and at Salt-meadows, near Friar's Goose, on the Durham side of the Tyne. Sandy fields near Lismore, Waterford, Ireland. 4. 7, 8.—Originally introduced with ballast, but now naturalised.

II. Umbels usually compound or perfect. (Gen. 4—40.)

A. *Fruit* neither prickly nor beaked, laterally compressed.

Albumen solid. (Gen. 4—15.)

4. CICÚTA Linn. Water-Hemlock. (Tab. I. f. 4.)

Fruit of 2 almost globose lobes or carpels, with 5 broad flattened ribs, and evident single *vittæ* between them. *Cal.-teeth* leafy. *Pet.* obcordate. (Partial involucre of many leaves.)—Name: *cicuta* was a term given by the Latins to those spaces between the joints of a reed of which their pipes were made; and the stem of this plant is equally formed of hollow internodes.

1. *C. virósa* L. (*Cowbane*, or *W.*); fibres of the root slender. *E. B.* t. 479.

In ditches, and about the margins of rivers and lakes in England and the Lowlands of Scotland; but not very frequent. 4. 6—8.—*Stem* 3—4 feet high, hollow, branched. *Leaves* biternate, the radical ones pinnate: *leaflets* lanceolate, serrate. *Umbels* pedunculate.—A deadly poison to man: cattle have been said, perhaps erroneously, to

eat the leaves with impunity, for Linnæus (Lach. Lap. II. p. 136.) held a quite different opinion.

5. *A'PIUM* Linn. Celery. (Tab. I. f. 5.)

Flowers perfect. Fruit roundish-ovate, didymous; carpels with 5 slender ribs, with single *vittæ* between them and two on the suture: *carpophore* entire. *Cal.-teeth* obsolete. *Pet.* roundish entire, with a small involute or inflexed point (Involucres 0.)—Name from *ap*, *ab*, or *av*, meaning *water* in various ancient languages; the plant growing in such places.

1. *A. graveolens* L. (*Wild C.*); point of petals involute. *E. B. t.* 1210.

Marshy places, especially near the sea; not unfrequent in England. Musselburgh, Scotland. ♂. 6—8.—*Stem* furrowed, 2 feet high. *Leaves* glabrous, pinnate or ternate; *leaflets* of the upper leaves wedge-shaped, lobed and cut at the extremity; the lower leaves are upon long stalks with their leaflets rounder and truncate at the base. *Umbels* often sessile; peduncled ones of few *flowers*.—Origin of our *garden celery*.

6. *PETROSELINUM* Hoffm. Parsley. (Tab. I. f. 6.)

Fruit ovate. *Carpels* with 5 slender ribs, and *vittæ* in the interstices; *carpophore* bipartite. *Cal.-teeth* obsolete. *Pet.* roundish, with a narrow incurved point. (Involucre of few, partial of many, leaves.)—Name: *πετρος*, a stone; being a native of rocky or stony places.

1. *P.* sativum* Hoffm. (*common P.*); leaves tripinnate shining, lower leaflets ovate-cuncate trifid and toothed, upper ones ternate lanceolate nearly entire, partial involucre filiform. *E. B. S. t.* 2793. *Apium Petroselinum* L.

Frequent on old walls, especially in the south-west of England. Blarney Castle, near Cork. ♂. 6—8.

2. *P. ségetum* Koch (*Corn P.*); radical leaves pinnate, leaflets nearly sessile ovate lobed cut and serrate, upper leaves with 1—3 linear leaflets, rays of the umbels few and unequal. *Sison L.*: *E. B. t.* 228.

Moist fields, chiefly on calcareous soils, in several parts of the middle and south of England. Sea-shore, between Bognor and Little Hampton, Sussex; and between Esher and West Moulsey, Surrey. Isle of Wight. ♂. 8, 9.—*Stem* 1 foot to 1½ high, wiry, spreading, branched. *Universal involucre* of about two leaves. *Fruit* strongly ribbed.

7. *TRÍNIA* Hoffm. Honewort. (Tab. I. f. 7.)

Diœcious. *Fruit* ovate. *Carpels* with 5 prominent ribs, and single *vittæ* beneath them. *Cal.-teeth* obsolete. *Pet.* of the

barren fl. lanceolate with a narrow involute point; of the *fertile* ovate, with a short inflected point.—Named in honour of *Dr. C. B. Trinius*, a Russian botanist, author of "*Species Graminum*," &c.

1. *T. vulgaris* DC. (*common H.*); glabrous, leaves tripinnate, leaflets linear filiform, involucre none or of one leaf, ribs of the fruit obtuse. *T. glaberrima* *a. Hoffm.* *Pimpinella dioica* *L.*: *E. B.* t. 1209.

Limestone, rare. Near Bristol. on St. Vincent's Rocks; at Uphill and Worle Hill, Somerset; Berry Head, Devon. Near Athboy, county of Meath, Ireland. γ . 5, 6.—Whole herb glaucous-green, pale, remarkable for the narrow segments of its *leaves*, and its diœcious *flowers*. *Root* fusiform.

8. HELOSCIÁDIUM Koch. Marsh-wort. (Tab. I. f. 8.)

Fruit broadly ovate or oblong. *Carpels* with 5 slender, prominent ribs, with single *vittæ* between them; *carpophore* entire. *Cal.-teeth* small or obsolete. *Pet.* ovate, obtuse with an apiculus.—Name: $\epsilon\lambda\omicron\varsigma$, a *marsh*, and $\sigma\kappa\iota\alpha\delta\iota\omicron\nu$, an *umbel*.

1. *H. nodiflorum* Koch (*procumbent M.*); stem procumbent creeping, leaves pinnate, leaflets ovate or ovate-lanceolate unequally serrate, umbels opposite to the leaves.—*a.* larger leaflets bluntly serrate, umbels longer than the peduncles or nearly sessile. *Sium* *L.*: *E. B.* t. 639.— *β .* smaller leaflets acutely serrate, umbels shorter than the peduncles. *Sium repens* *L.*: *E. B.* t. 1431.

Boggy meadows and sides of lakes and rivulets. γ . 7, 8.—*Stems* from 6 inches to 2 feet long. *Leaflets* 5—9. The two varieties often pass into each other.

2. *H. inundatum* Koch (*least M.*); stems creeping, lower leaves capillaceo-multipartite, upper ones pinnatifid, umbels generally of 2 rays. *Sison* *L.*: *E. B.* t. 227. *Sium Sm.*

Lakes and pools that are dried up in summer. γ . 6, 7.—*Stems* 4—6 inches long. *Leaves* mostly capillaceo-multifid, with the segments small and lanceolate, those of the upper leaves wedge-shaped and trifid. *Partial umbels* minute, scarcely longer than their *involucre*s. *Univ. involucre* 0. *Fruit* large in proportion to the size of the plant.

9. SISON Linn. Bastard Stone-Parsley. (Tab. I. f. 9.)

Fruit ovate. *Carpels* with 5 ribs, and single clavate *vittæ* between them. *Cal.-teeth* obsolete. *Pet.* broadly obcordate, deeply notched and curved, with an inflected point. (*Involucres of few leaves*: partial *subdimidiate*.)—Name: *sizon*, signifying in Celtic a *running brook*; some of the plants formerly placed in this genus delighting in such situations.

1. *S. Amómmum* L. (*Hedge B.*): *E. B.* t. 954.

Chalky, rather moist ground, under hedges, in England. Near Coldstream, Scotland. ♂. 8, 9.—*Stem* 2—3 feet high. *Lower leaves* pinnate, with lobed inciso-serrate ovate *leaflets*; upper ones cut into narrow segments. *Petals* broad. *Fruit* roundish-ovate, pungent and aromatic.

10. *ÆGOPÓDIUM* Linn. Gout-Weed. (Tab. I. f. 10.)

Fruit oblong, crowned with the conical bases of the deflexed styles. *Carpels* with 5 slender ridges, without *vittæ*. *Cal.-teeth* obsolete. *Pet.* obcordate, with an inflexed point. (Involucre 0.)—Named from *αἴξ*, *αἴγος*, a goat, and *πούς*, a foot; the leaves being cleft something like the foot of that animal.

1. *Æ. Podagrária* L. (common *G.*, or *Bishop-weed*): *E. B.* t. 940.

Gardens and wet places. ♀. 6—8.—A foot and a half high. *Radical leaves* twice ternate, upper ones ternate; *leaflets* ovate, acuminate, unequally serrate. The creeping *rhizome* is pungent and aromatic. Although now among our most common and noxious weeds, it appears to have been originally introduced by the monks.

11. *CÁRUM* Linn. Caraway. (Tab. I. f. 11.)

Fruit oblong, crowned with the depressed bases of the deflexed styles. *Carpels* with 5 ribs, and single *vittæ* between them. *Cal.-teeth* obsolete. *Pet.* obcordate with an inflected point.—Name derived, according to Pliny, from that of the country, *Caria*; but more probably from the Celtic or Gaelic *carbha*, a ship, from the shape of the carpels.

1. *C. *Cáruí* L. (common *C.*); root fusiform, stem branched, partial involucre none, universal none or 1-leaved. *E. B.* t. 1503.

Meadows and pastures in several places both in England and Scotland. ♂. 6.—*Stem* 1—2 feet high. *Leaves* doubly pinnate, cut into linear segments, of which the lowermost are decussate. *Umbels* dense. *Carpels* agreeably aromatic, and well known as *caraway seeds*. *Carpophore* bipartite.

2. *C. Bulbocástanum* Koch (*tuberous C.*); root tuberous, general and partial involucre of many linear-lanceolate leaves, leaves tripinnate, their segments linear acute. *Bunium* L.: *E. B. S.* t. 2862.

Fields. Cherry Hinton, Cambridgeshire; and over the whole of the chalk district from Bygrave, near Baldock, in Hertfordshire, to the neighbourhood of Dunstable (20 miles), so plentiful near Baldock, that the farmers turn their pigs upon the fallows to feed upon the root. ♀. 6, 7.

3. *C. verticillatum* Koch (*whorled C.*); root fascicled, leaflets all capillary in short whorled segments. Sison *L.*: *E. B.* t. 395.

In England, very rare; near Carlisle. In the flat parts of Wales, Killarney, and near Bantry Bay, Ireland. Extremely abundant in moist hilly pasturages in the west of Scotland, especially near the Clyde. 4. 7, 8.—*Leaves* mostly radical; a long common *petiole* bears a number of opposite multifid capillary *leaflets*, whose spreading makes them appear whorled. *Stem* a foot high, slender. *Umbels* few, terminal. General and partial *involucres* very small, deflexed.

12. *BUNIUM* Koch. Earth-nut. (Tab. I. f. 12.)

Fruit oblong, crowned with the bases of the diverging or nearly straight styles. *Carpels* with 5 slender, obtuse ribs, and 2—3 elongated linear *vittæ* between them, and none upon the suture. *Cal.-teeth* obsolete. *Pet.* obcordate, with an inflected point.—Named from *βουνος*, a *hill*; where the plant delights to grow.

1. *B. flexuosum* With. (*common E.*); stem-leaves few nearly sessile with linear segments, general involucre 0 or 1—2-leaved, styles erect with a conical base. *E. B.* t. 988.

Woods and pastures, frequent. 4. 5, 6.—*Root* a solitary *tuber*, much sought for by children and pigs. *Stem* solitary, erect, flexuose. *Radical leaves* triternate. *Fruit* oblong, moderately ribbed, a little narrower upwards, crowned with the straight *styles*, which have conical, elongated, tumid bases.

13. *PIMPINÉLLA* Linn. Burnet-Saxifrage. (Tab. I. f. 13.)

Fruit ovate, crowned with the swollen base of the reflexed styles. *Carpels* with 5 slender ribs, the interstices furrowed with 2—3 long linear *vittæ*: suture with *vittæ*. *Cal.-teeth* obsolete. *Pet.* obcordate, with an inflected point. (*Involucres* 0)—Name altered, as Linnæus informs us, from *bipennula*, or twice-pinnate; in allusion to the division of the leaves.

1. *P. Saxifraga* L. (*common B.*); radical leaves pinnate, their leaflets roundish sharply serrate or cut, those of the stem bipinnate with linear segments, stems terete, fruit glabrous. *E. B.* t. 407.

Dry pastures, frequent. 4. 7—9.—*Stem-leaves* few; lower and radical ones upon long stalks. *Leaflets* of the latter often deeply and pinnatifidly cut, and sometimes even bipinnatifid. *Peduncles* glabrous or densely pubescent (*P. nigra* W.).

2. *P. máigna* L. (*greater B.*); leaves all pinnate, leaflets ovate-serrate somewhat cut the terminal one (rarely the lateral ones) 3-lobed, stem angled and striate, fruit glabrous. *E. B.* t. 408.

Shady places, on a chalky or limestone soil, in several parts of England. Banks of the Teith, Perthshire. Near Cork, Muckross, and Killarney. 2. 7, 8.—Larger in all its parts than the foregoing, and the *leaflets* of the upper *leaves* much broader and less divided.

14. *SÍUM* Linn. Water-Parsnep. (Tab. I. f. 14.)

Fruit ovate or globose, subdidymous, crowned with the depressed base of the reflexed styles. *Carpels* with 5, rather obtuse ribs, and 2 or more *vittæ* between them: suture with *vittæ*. *Cal.-teeth* small or obsolete. *Pet.* obcordate, with an inflected point. (Partial involucre of many leaves.)—Name: according to Théis, from the word *siw*, *water*; from which come the English word *sea* and the Greek *σειω*, to *shake*.

1. *S. latifólium* L. (*broad-leaved W.*); stem erect, leaves pinnate, leaflets oblong-lanceolate equally serrate, umbels terminal. *E. B. t.* 204.

River-sides, ditches, and watery places. Rather rare in Scotland. 2. 7, 8.—*Stems* 3—4 ft. high, furrowed. *Leaflets* distant, 5—9. *Involucre* of many leaves. *Fruit* small. Base of *styles* depressed. *Carpels* with the lateral ribs marginal; interstices with 3 superficial *vittæ*. *Albumen* flat on the inner face.

2. *S. angustifólium* L. (*narrow-leaved W.*); stem erect, leaflets unequally lobed and serrate, umbels pedunculate opposite to the leaves. *E. B. t.* 139.

Ditches, and rivulets, frequent. Not common in Scotland. 2. 7, 8.—Smaller than the last. *Stem* striate. *Leaflets* of the upper *leaves* most unequal and lacinate: *radical leaves* ovate, their lowermost leaflets distant. *Involucre* many-leaved. Base of *styles* somewhat conical. Ribs of the *carpels* not prominent: lateral ones not marginal. *Vittæ* 3 or more together, immersed. *Albumen* terete.

15. *BUPLEÚRUM* Linn. Hare's-Ear. (Tab. I. f. 15.)

Fruit ovate-oblong, crowned with the depressed base of the styles. *Carpels* with 5, more or less prominent ribs, with or without *vittæ*. *Cal.-teeth* obsolete. *Pet.* roundish entire, with an involute retuse broad point. (Leaves undivided.)—Named from *βους*, an *ox*, and *πλευρον*, a *rib*; in allusion to the ribbed leaves of some species.

1. *B. aristátum* Bartl. (*narrow-leaved H.*); stem branched, universal and partial involucre each about 4—5-leaved, leaflets lanceolate cuspidate with branching nerves longer than the umbels, leaves linear 3-nerved, stem panicle, pedicels short equal. *B. Odontites E. B. t.* 2468. (not *L.*)

Rocks in the neighbourhood of Torquay. Channel Islands. ☉. 7.—A small plant, 3—6 inches or more high, with rigid, striate.

pale yellow-green, pungent *leaves*. *Flowers* in terminal, much involucrated *umbels*.

2. *B. rotundifolium* L. (*common H.*, or *Thorow-wax*); stem branched above, universal involucre wanting, partial involucre mucronate, leaves perfoliate roundish oval. *E. B.* t. 99.

Corn-fields in England, on chalky soil. Abundant about Swaffham, and in Cambridgeshire. Streatley, Berkshire. ☉. 6, 7.—*Carpels* with the interstices striate.

3. *B. tenuissimum* L. (*slender H.*); stem very much branched, leaves linear acute, umbels very minute few-flowered, partial ones usually shorter than the setaceous involucre. *E. B.* t. 478.

Salt-marshes on the south and east coasts of England. Banks of the Dee, below Chester. ☉. 8, 9.—*Stems* very wiry, slender. *Leaves* remote, very sharp, mostly 3-nerved. *Umbels* inconspicuous, often sessile and axillary. *Carpels* granulated between the 5 ribs, by which it differs from all our other species.

4. *B. *fulcatum* L. (*falcate-leaved H.*); stem erect branched, radical leaves oblong or obovate on long stalks, upper sessile linear-lanceolate, partial involucre of 5 lanceolate leaves as long as the flowers, universal 5-leaved. *E. B. S.* t. 2763.

Norton Heath near Ongar, Essex, growing by the road-side for nearly a mile. ♀. 8.

B. Fruit neither prickly nor beaked, ovate or elliptical, rounded on a transverse section. (Carpels separating, interstices with vittæ.) Albumen solid. (Gen. 16—23.)

16. ÆNÁNTHE Linn. Water-Dropwort. (Tab. II. f. 16.)

Fruit ovate-cylindrical, crowned with the long nearly straight styles. *Carpels* more or less corky, with 5 blunt, convex ribs, and single *vittæ* in the interstices. *Cal.-teeth* lanceolate. *Pet.* obovate, with an inflected point, radiant. (Partial involucre of many rays.) *Flowers of the circumference on long stalks and sterile: those of the centre sessile, or nearly so, and fertile.*—Named from οἶνος, wine, and ἄνθος, a flower; alluding to the vinous smell of the blossoms.

1. Æ. *fistulosa* L. (*common W.*); sarmentose, stem-leaves pinnate, their main stalk as well as the stem cylindrical fistulose, umbels of very few rays, fruit turbinate. *E. B.* t. 363.

Ditches and rivulets, common in England, rare in Scotland. ♀. 7—9.—Plant 2—3 feet high, remarkably tubular, throwing out runners. Root sometimes of fascicled knobs, sometimes of verticillate

fibres. *Stem-leaves* distant; the leaflets, which are few, linear, and small, are confined to the upper extremity of the leaves. *Univ. invol.* wanting. *Fruit* sessile, large, turbinate, angled, corky, tipped with the long slightly diverging *styles*, and forming dense globose heads 3-5 lines in diameter.

2. *Æ. pimpinelloides* L. (*callous-fruited* W.); leaflets and segments very acute or mucronate, those of the radical leaves much broader and shorter, fruit cylindrical with an enlarged callous base. *Jacq. Austr.* t. 394.

Pastures in England, particularly in the counties of Gloucester, Worcester, Dorset, and Devon; abundant in the Isle of Wight. Rare in salt-marshes; Isle of Wight; and Bishopstone, near Seaford, in Sussex. *Æ.* 6—8.—*Root* of long slender fibres swelling into a round or oval *knob* about or beyond the middle. *Gen. invol.* sometimes wanting, usually with several persistent leaves. *Umbels* compact. *Fruit* as broad as the calyx.

3. *Æ. Lachenálii* Gmel. (*Parsley* W.); leaflets of the lower leaves linear obovate or cuneate-trifid obtuse mucronate, of the upper ones acute, fruit turbinate or oblong narrowest and without a callosity at the base. *Æ. pimpinelloides* Sm.: *E. B.* t. 347.

Salt-marshes in England, not uncommon; more rare in fresh water. In Scotland chiefly on the west coast and always near the sea. *Æ.* 7—9.—*Root* of sessile, long, clavate, fusiform *knobs*, or subcylindrical thick fibres. *Gen. invol.* sometimes wanting, usually several-leaved and persistent. *Umbels* lax, so that the *partial* ones are not close to each other. *Fruit* broader than the calyx. The *radical leaves* disappear very early, so that practically this must be distinguished from the preceding by the fruit and root. Perhaps it is a mere variety of *Æ. peucedanifolia* Poll.

4. *Æ. silaifolia* Bieb. (*Sulphur-wort* W.); leaflets and segments of the lower stem-leaves linear-lanceolate acute scarcely broader than those of the upper stem-leaves, fruit subcylindrical callous at the base. *Æ. peucedanifolia* Sibth. (not Poll.): *E. B.* t. 348.

In fresh-water marshes and meadows rare. Counties of Oxford, Bedford, Gloucester, Worcester, Leicester, Surrey, and Sussex. Very rare, in salt-marshes, as at Portmarnock, Co. Dublin, Ireland. *Æ.* 6.—*Root* of sessile, rather short, clavate, or oblong, fusiform *knobs*. *Branches* very fistulose. *Gen. invol.* usually wanting, or of a few caducous leaves. *Umbels* lax.

5. *Æ. crocota* L. (*Hemlock* W.); leaves tri-quadripinnate, leaflets stalked cuneate-ovate or roundish cut and serrate, those of the upper leaves narrower, fruit cylindrical oblong without a callous base. *E. B.* t. 2313.

Watery places, by ditches and rivers, frequent. 4. 7.—*Root* consisting of large fusiform sessile *knobs*. *Plant* 3—5 ft. high. This differs from all the preceding in the great breadth of its *leaflets*, and the large, much ramified *stems*, the juice of which becomes often yellow when exposed to the air. *Gen. invol.* usually of a few leaves.

6. *Æ. Phellándrium* Lam. (*fine-leaved W.*); “stem erect thickened at the base with many whorled fibres, leaves tripinnate their segments simple or pinnatifid, those of the submersed ones capillary, umbels lateral opposite to the leaves, fruit ovate twice as long as the nearly erect styles.” *Colem. in E. B. S. t. 2944 (ad calcem)*. *Phelland. aquaticum L.: E. B. t. 684*.

Ditches and ponds. Not uncommon in England. Very rare in Scotland. ♂. 7—9.

7. *Æ. fluviátilis* *Colem. (River W.)*; “stem ascending floating attenuated and creeping at the base, leaves bipinnate, segments simple or pinnatifid, those of the submersed ones wedge-shaped pellucid cut with many parallel nerves, umbels lateral opposite to the leaves, fruit broadly elliptical thrice as long as the spreading styles.” *Colem. in E. B. S. t. 2944*.

Streams in the middle and south-east of England, where it is more common than the last. ♂. 7—9.—This has certainly a different appearance from the last, but we are not satisfied that it is not the same species growing in deeper and running water: we can perceive no difference in the form of the fruit. It was first noticed by Dillenius, and seems to have been considered till lately a form of the last by both British and foreign botanists. See the *Phytol.* iv. p. 673.

17. *ÆTHÚSA* Linn. Fool's-Parsley. (Tab. II. f. 17.)

Fruit ovate-globose. *Carpels* with 5 acute ribs; interstices deeply acutangular with single *vittæ*. *Cal.-teeth* minute. *Pet.* obcordate, with an inflected point. (Partial involucre of 1—3 unilateral pendulous or spreading leaves.)—Named from *αἴθω*, to burn; on account of its acrid quality.

1. *Æ. Cynápium* L. (*common F.*); leaflets wedge-shaped decurrent with lanceolate bluntish segments, rays of the umbel nearly equal, involucre none, partial one longer than the umbel. *E. B. t. 1192*.

Fields and gardens. ☉. 7, 8.—*Stem* a foot high, striate, branched, very leafy. *Leaves* glabrous, doubly, or the lower ones trebly, pinnate; segments ovate-lanceolate, variously cut. *Umbels* terminal, on long stalks; *partial* ones small, distant. *Partial invol.* of 3 long, pendulous leaves, all on one side.

18. *FÆNÍCULUM* Hoffm. Fennel. (Tab. II. f. 18.)

Fruit oblong. *Carpels* with 5 prominent, obtuse ribs, with single *vittæ* in the interstices. *Styles* short. *Cal.-teeth* obsolete.

Pet. roundish, entire, the involute segment obtuse. (Involucres 0.)—Named from *fœnum, hay*; its smell having been compared to that of hay.

1. *F. vulgäre* Gærtn. (*common F.*); leaves biternate, leaflets pinnatifid, segments awl-shaped or filiform. *Anethum Fœniculum* L.: *E. B.* t. 1208.

Rocks in England near the sea, especially on chalky cliffs. Near towns and villages in Norfolk and Suffolk, at short distances from the coast, but scarcely indigenous. *Æ.* 7, 8.—*Stem* 3—4 ft. high. *Leaves* much divided; their segments very slender in the cultivated form, but usually shorter and more rigid in wild specimens, particularly those of the upper leaves. *Flowers* dark yellow; the base of the *styles* very glutinous. The true fennel of the gardens, *F. dulce*, is scarcely distinct, and may be the Norfolk and Suffolk plant.

19. *SÉSELI* Linn. Meadow-Saxifrage. (Tab. II. f. 19.)

Fruit oval or oblong, crowned with the long reflexed *styles*. *Carpels* with 5 prominent obtuse corky ribs, with single *vittæ* in the interstices. *Cal.-teeth* acute. *Pet.* obcordate, with an inflexed point. (Partial invol. of many leaves.)—Named from *σεσέλι*, originally applied to some plant of this kind.

1. *S. Libanótis* Koch (*Mountain M.*); stem furrowed, leaves bipinnatifid, leaflets inciso-pinnatifid, of the lower ones decussate, the segments lanceolate very acute, umbels hemispherical, universal involucre of many leaves, segments of the calyx elongated subulate deciduous, fruit villous. *Athamanta* L.: *E. B.* t. 138. *Libanotis montana* Crantz.

Chalky pastures, very rare. Gogmagog hills, Cambridgeshire; between St. Alban's and Stony-Stratford; between Seaford and Cuckmere, Sussex. *Æ.* 7, 8.—*Root* fusiform, crowned with the fibrous bases of the old leaves. *Stem* 1½—2 ft. high.

20. *LIGÚSTICUM* Linn. Lovage. (Tab. II. f. 20.)

Fruit elliptical. *Carpels* with 5 sharp, somewhat winged ribs, with many *vittæ* in the interstices. *Cal.-teeth* sometimes obsolete. *Pet.* obcordate, with an inflected point. (Partial involucre of many leaves.)—Named from *Liguria*, where the old *Ligusticum Levisticum* abounds. From the latter word comes its name *lovage*.

1. *L. Scóticum* L. (*Scottish L.*); leaves twice ternate, leaflets subrhomboid dentato-serrate not glossy, general involucre of about 6 narrow leaves, calyx 5-toothed, seeds free. *E. B.* t. 1207. *Haloscias* Fries.

Rocky sea-coasts, in the north of England and Scotland, frequent. *Æ.* 7.—*Root* fusiform, acrid but aromatic. *Stem* nearly simple. *Leaves* mostly radical; *leaflets* large, deeply serrate, rather fleshy.

21. *SILÁUS* Besser. Pepper-Saxifrage. (Tab. II. f. 21.)

Fruit oval. *Carpels* with 5 sharp, somewhat winged ribs, with many *vittæ* in the interstices. *Cal.* obsolete. *Pet.* obovate, subemarginate with an inflected point, appendaged; or sessile and truncate at the base. (Partial involucre of many leaves.) — Scarcely different from *Ligusticum*, except, in its yellowish, nearly entire not acutely emarginate petals, truncate and sessile at the base.—Name of dubious origin; it was applied by Pliny to some herb.

1. *S. pratensis* Besser (*Meadow P.*); leaves tripinnate, leaflets linear-lanceolate opposite, general involucre of 1 or 2 leaves. *Peucedanum Silaus* L.: *E. B.* t. 2142.

Pastures and meadows, not unfrequent in England. Near Oxenford Castle and Kelso, Scotland. *℥.* 6—9.—*Stem* 1—2 feet high. *Partial umbels* small, distant. *Flowers* pale yellow. Whole plant fetid when bruised, apparently rejected by cattle.

22. *MÉUM* Tourn. Spignel. (Tab. II. f. 22.)

Fruit elliptical. *Carpels* with 5 prominent, carinate, equal ribs, with many *vittæ* in the interstices. *Cal.-teeth* obsolete. *Pet.* entire, elliptical, the point incurved. (Partial involucre of many leaves.)—Name: supposed to be the *μῆρον* of Dioscorides.

1. *M. Athamánticum* Jacq. (*S., Men, or Bald-Money*); all the leaflets multipartite, segments bristle-shaped. *E. B.* t. 2249. *Athamanta Meum* L.

Dry alpine pastures, in the north of England and Scotland, especially in the Highlands, frequent. *℥.* 6, 7.—*Root* fusiform, eaten by the Highlanders as an aromatic and carminative: at its summit are the fibrous remains of former years' leaves. *Leaves* long, dark-green, doubly pinnate. *Flowers* yellowish.—Remarkable for its setaceo-multifid leaf and powerfully aromatic smell.

23. *CRÍTHMUM* Linn. Samphire. (Tab. II. f. 23.)

Fruit elliptical. *Carpels* spongy, with 5 elevated, sharp, somewhat winged ribs, and, as well as the loose seed, abundantly marked with *vittæ*. *Cal.-teeth* obsolete. *Pet.* elliptical, entire, involute. (Involucres of many leaves.) — Name from *κριθῆν*, barley; from the resemblance between the fruit of this plant and a grain of barley.

1. *C. marítimum* L. (*Sea S.*): *E. B.* t. 819.

Rocks by the sea-side. Rare in Scotland; on the coast of the Solway Frith, and Culzean Castle, Ayrshire. *℥.* 5—8.—Whole plant very succulent, pale green. *Leaves* bi-triternate; leaflets lanceolate fleshy. Leaves of the involucre lanceolate.

C. *Fruit neither prickly nor beaked, much and dorsally compressed: Albumen solid.* (Gen. 24—28.)

24. *ANGÉLICA* Linn. *Angelica*. (Tab. II. f. 24.)

Fruit flat, with 2 wings on each side. *Carpels* with 3 elevated dorsal ribs, the lateral ones spreading into broad wings. *Cal.-teeth* small or obsolete. *Pet.* elliptical-lanceolate, entire and inflected at the point.—Named *Angelica* from its cordial and medicinal properties.

1. *A. *Archangélica* L. (*Garden A.*); terminal leaflet lobed, calyx 5-toothed, fruit without vittæ, seed free marked with numerous vittæ. *E. B. t.* 2561. *Archangelica officinalis Hoffm.*

Watery places, rare. Birmingham; Dorking, Surrey; also in Durham: but nowhere truly wild. ♂. 7—9. — *Stem* 4—5 feet high, and from 1—2 inches in the thickest diameter, glabrous, fistulose. *Leaves* bipinnate; *flowers* greenish-white.

2. *A. sylvestris* L. (*wild A.*); leaflets equal ovate serrate at the base somewhat lobed, calyx-teeth obsolete, fruit with the interstices of the ridges having single vittæ, seed adhering without vittæ. *E. B. t.* 1128.

Moist woods and marshy places, especially near rivers, frequent. 7. 8. — *Plant* 2—3 feet high. *Stem* purplish, pubescent above, as well as the *umbels*. — Inferior in its qualities to the former species.

25. *PEUCÉDANUM* Linn. *Hog's-Fennel*. (Tab. II. f. 25.)

Fruit flat with a broad thin border.¹ *Carpels* with 5 slightly prominent nearly equidistant ribs, the 2 lateral ones obsolete, *vittæ* single in the interstices. *Pet.* obovate or obcordate with an inflected point. (Partial involucre of many leaves.) — Named from *πευκη*, a *pine-tree*, and *δᾶνος*, a *gift*; on account of a resinous substance, which exudes from some of the species.

1. *P. officinale* L. (*Sea H.*, or *Sea Sulphur-weed*); leaves five times tripartite, leaflets linear-filiform flaccid, involucre few linear deciduous, calyx 5-toothed, fruit with a narrow margin. *E. B. t.* 1767.

In salt-marshes, very rare. Kent and the coast of Essex. 7. 8. 9. — Remarkable for its large *umbels* of yellow *flowers*, and its long and extremely narrow *leaflets*. The whole plant, especially the *root*, has a strong sulphurous smell, and the latter yields a resinous substance, reckoned a stimulant, but of dangerous internal use.

¹ In this genus and the three next, the wing of the fruit, being composed of the margin of two carpels, may separate in maturity into a double wing; but in *Angelica* the wing is always double.

2. *P. palústre* Mœnch (*Marsh H.*, or *Milk-Parsley*); milky, leaves ternately decompound, leaflets opposite pinnatifid, segments linear-lanceolate with a hard point, rays of the umbel rough, involucre of many persistent lanceolate leaves, calyx 5-toothed, fruit with a narrow margin. *Selinum* L.: *E. B.* t. 229.

Marshy and boggy places, but apparently very local. Yorkshire and Lancashire; about Norwich and the Isle of Ely; Burwell Fen, Cambridgeshire. Ardincaple on the Clyde. 4. 7—8.—*Stem* furrowed, 4—5 feet high, with very compound *leaves*, abounding in a milky juice, which dries to a brown resin. *Flowers* white.

3. *P. *Ostrúthium* Koch (*broad-leaved H.*, or *Master-Wort*); leaves biternate, leaflets broadly ovate lobed inciso-serrate unequal at the base, sheaths very large, universal involucre none, calyx-teeth obsolete, fruit with a very broad margin. *Imperatoria* L.: *E. B.* t. 1380.

Moist pastures in the north of England, and in various parts of Scotland; the plant was formerly much cultivated as a potherb. 4. 6.—*Flowers* white. *Partial involucre* several, subulate.

26. PASTINÁCA Linn. Parsnep. (Tab. II. f. 26.)

Fruit flat, with a broad border. *Carpels* with 3 dorsal and 2 distant marginal ribs on the border, with single filiform *vittæ*, the length of the fruit, in the interstices. *Cal.-teeth* nearly obsolete. *Pet.* roundish, entire, involute, with a sharp point. (Involucre 0 or of few leaves.)—Differs from *Heracleum* in the entire involute petals, and filiform, not clubbed, *vittæ*.—Name derived from *pastus*, food.

1. *P. satíva* L. (*common wild P.*); stem furrowed, leaves pinnate downy beneath, leaflets ovate cut and serrate, ultimate one 3-lobed, involucre none, fruit oval. *E. B.* t. 556.

Borders of fields and pastures in a chalky or gravelly soil. About Cambridge; Crosby near Liverpool; abundant in Hants and Essex. ♂. 7, 8.—*Root* fusiform; the origin of our garden *parsnep*. *Leaves* generally shining. *Petals* very convex, involute, yellow.

27. HERÁCLEUM Linn. Cow-Parsnep. (Tab. II. f. 27.)

Fruit flat, with a broad border. *Carpels* with 3 dorsal ribs and 2 distant marginal ones, and rather short club-shaped *vittæ* in the interstices. *Pet.* obcordate, point inflected; outer ones radiant. (Involucre deciduous; partial of many leaves.)—Named from *Hercules*, who is said to have brought this or some allied plant into use.

1. *H. Sphondýlium* L. (*common C.*, or *Hog-weed*); leaves pinnate rough hairy, leaflets pinnatifid cut sinuate, ultimate one

somewhat palmate, petals unequal, fruit glabrous nearly orbicular.—*α*. lobes of leaflets broad. *E. B. t.* 939.—*β*. leaves more deeply cut, lobes narrower. *II. angustifolium Sm. Fl. Br.*

Hedges, pastures, and bushy places, frequent. ♂. 7.—A tall rank weed, 4—5 ft. high. *Leaves* coarsely serrate, sheaths inflated. *Flowers* white or reddish. *Carpels* with 2 *vittæ* on the suture.

28. *TORDYLIUM* Linn. Hart-wort. (Tab. II. f. 28.)

Fruit flat, with a broad thick crenate or waved border. *Carpels* with indistinct ribs, 3 dorsal and 2 distant marginal ones, with 1 or 3 *vittæ* in the interstices. *Pet.* radiant.—Name: the *τορδύλιον* of the Greeks.

1. *T. officinale* L. (*small H.*); 2 outer petals of the flowers of the ray each with one very large lobe, partial involucre setaceous as long as the umbels, fruit with the thickened border beautifully crenate and glabrous. *E. B. t.* 2440.

Near London (?): *Ray* and *Petiver*. ☉. 6, 7.—Hairy, 1 foot high. *Leaflets* few, ovate, lobed, and notched, upper ones confluent. *Flowers* beautiful, with the outer large lobes of the *petals* white. *Fruit* rough on the surface, and having a very thick, pale, deeply notched or almost beaded border. *Vittæ* several between the ribs, and on the suture.

2. *T. maximum* L. (*great H.*); 2 outer petals of the flowers of the ray each with 2 equal lobes, involucre linear shorter than the umbel, fruit with the thickened border scarcely notched and as well as the disk rough with adpressed bristles. *E. B. t.* 1173.

Rare; in waste ground about London, Oxford, and Eton. Between Twickenham and Isleworth. ☉. 6, 7.—Much taller than the last, and with a greater number of more lanceolate *leaflets*. *Involucre* very short. *Petals* all comparatively small, rose-coloured. *Vittæ* solitary between the ribs, 2 on the suture.

D. *Fruit globose, not prickly. (Carpels scarcely separating.)*
Albumen solid. (Gen. 29.)

29. *CORIANDRUM* Linn. Coriander. (Tab. II. f. 29.)

Fruit globose. *Carpels* closely cohering, the ribs obsolete, broad; interstices prominent, slender, without *vittæ*. *Petals* obcordate with an inflected point; outer ones radiant. (*Involucre* 0; partial on one side.)—Name: from *κορις*, a bug; in allusion to the intolerably fetid smell of the bruised foliage.

1. *C. sativum* L. (*common C.*): *E. B. t.* 67.

Fields and waste places, about Ipswich and in Essex, &c. ☉. 6.—This is the only true species of the genus, and is well known as a

medicinal plant. *Stem* erect, leafy. *Lower leaves* bipinnate; the pinnæ pinnatifid, with broad, wedge-shaped, toothed segments: the *upper leaves* gradually more compound, their segments very narrow and linear, those of the uppermost leaves nearly setaceous. *Fruit* very curious; each *carpet* is hemispherical, on its inner and flat side having a projecting margin, which so combines with the opposite one as to leave no line or furrow between the two, and they form a complete little ball or globe, having, however, when quite ripe, 10 obscure elevated lines or ribs.

E. Fruit short and turgid, neither prickly nor beaked, somewhat laterally compressed. *Albumen* furrowed or involute at the suture. (Gen. 30—32.)

30. *Conium* Linn. Hemlock. (Tab. II. f. 30.)

Fruit broadly ovate. *Carpels* with 5 prominent waved or crenate ribs, without *vittæ*. *Albumen* furrowed. *Cal.-teeth* obsolete. *Petals* obcordate. (Involucre of few leaves; partial of 3 leaves on one side.)—Name: *κωνελλον*, of Theophrastus, from *κωνος*, a cone or a top; whose whirling motion resembles the giddiness produced on the human constitution by the poisonous juice of this plant.

1. *C. maculatum* L. (common II.); stem glabrous spotted, leaves tripinnate, leaflets lanceolate pinnatifid with acute and often cut segments. *E. B. t.* 1191.

Waste places, banks, and under walls, not unfrequent. ♂. 6, 7. — *Root* fusiform. *Stem* 2—4 feet high, hollow, striate, and spotted with purple, much branched upwards. *Leaves* large, much divided, when bruised extremely fetid, yielding a powerful medicine. It is best distinguished from its allies by its spotted stem, fetid smell, and by the unilateral partial involucre (which are ovate-lanceolate acuminate and shorter than the umbels), together with the waved ridges of the fruit.

31. *Physospermum* Cuss. Bladder-seed. (Tab. III. f. 31.)

Fruit of 2 ovate-globose lobes or *carpels*, each with 5 indistinct filiform ribs, and single *vittæ* between them. *Albumen* furrowed. *Cal.-teeth* evident. *Pet.* obcordate. (Involucre and partial involucre of 1—5 leaves.)—Named from *φύσα*, a bladder, and *σπέρμα*, a seed; from the loose covering to the seed.

1. *P. Cornubiense* Hook. (Cornish B.). *P. aquilegifolium* Koch. *Ligusticum Cornubiense* L.: *E. B. t.* 683.

Bushy fields, about Bodmin in Cornwall. Wood on the Devonshire side of the Tamar (now extinct). 4. 7, 8. — *Stem* a foot and a half to 2 feet high, erect, striate, glabrous, paniced above. *Leaves* mostly radical, on long stalks, triternate; *leaflets* wedge-shaped, cut

and lacinate or deeply tripartite, the segments 'acute, glabrous or minutely downy on the veins and margins. *Cauline leaves* few, small, less divided, the segments longer and slenderer. The coat of the *carpels* is crustaceous and so loose that the *seed* is free within.

32. *SMÝRNIUM* Linn. Alexanders. (Tab. III. f. 32.)

Fruit of 2 nearly globose lobes or *carpels*, each with 3 dorsal prominent sharp ribs, the two lateral ones obsolete; interstices with several *vittæ*. *Albumen* involute. *Pet.* lanceolate or elliptical, with an inflected point. — Named from *σμύρνα*, synonymous with *μύρρα*, *myrrh*; from the scent of the juice of some species.

1. *S. Olusútrum* L. (common *A.*); *cauline leaves* ternate petiolate serrate. *E. B.* t. 230.

Waste ground and among ruins, especially near the sea; not unfrequent. ♂. 4—6. — *Stem* 3—4 feet high, very stout, furrowed. *Leaves* bright yellow-green, twice (or the lower ones thrice) ternate, with a very broad membranous base; *leaflets* very large, broadly ovate, lobed, and serrate. *Flowers* yellow-green, in very dense, numerous, rounded *umbels*. *Involucres* none. *Fruit* almost black when ripe.

F. Fruit oblong, not prickly, furrowed or involute at the suture, usually more or less beaked. (Gen. 33—36.)

33. *SCÁNDIX* Linn. Shepherd's Needle. (Tab. III. f. 33.)

Fruit laterally compressed, with a long beak. *Carpels* with 5 obtuse ribs and no *vittæ*. *Cal.-teeth* obsolete. *Pet.* obovate, with an inflected point. (Universal involucre wanting, or of one leaf; partial one of 5—7 leaves.)—Name: *σκανδιξ*, the Greek appellation for some kind of *chervil*.

1. *S. Pécten* L. (common *S.*, or *Venus' Comb*); beak 3—4 times longer than the roughish fruit dorsally compressed ciliated with bristles, *leaflets* cut into many linear or lanceolate short segments. *E. B.* t. 1397.

Corn-fields, abundant. ☉. 6—9. — *Stem* 4—12 inches high, roughish. *Leaves* triply pinnate. *Umbels* of very few rays, 2—3: *universal* ones often sessile in the axil of the sheath of the upper leaves. *Partial invol.* entire or cut, rarely pinnatifid or bipinnatifid and resembling the segments of the leaves.

34. *ANTHRÍSCUS* Hoffm. Beaked-Parsley. (Tab. III. f. 34.)

Fruit constricted at the suture, with a short beak. *Carpels* without ribs or *vittæ*. *Cal.-teeth* obsolete. *Pet.* obcordate. (Partial involucre of many leaves.)—Name: given by Pliny to a plant, allied probably to this genus, but we are ignorant of its derivation.

* *Fruit smooth.*

1. *A. sylvestris* Hoffm. (*wild B.*) ; umbels terminal stalked, stem hairy at the base glabrous upwards, a little swelling below each joint. *Chærophýllum L.: E. B. t. 752.*

Hedges and borders of fields, frequent. γ . 4—6.—*Stem* 3 ft. or more high, branched. *Leaves* triply pinnate; *leaflets* ovate-lanceolate, deeply cut. *Umbels* at first slightly drooping. *Partial involucre*s of several ovate-lanceolate ciliate leaves. *Fruit* linear-oblong, with a much less evident *beak* than in *A. Cerefolium*. This *beak* alone is marked with a few ribs.

2. *A. *Cerefolium* Hoffm. (*Garden B., or Chervil*) ; umbels lateral sessile, stems hairy above the joints only, leaves tripartite decomposed, leaflets ovate pinnatifid the segments obtuse. *Scandix L.: E. B. t. 1268.*

Hedges and about gardens. Clifton, Notts: *Dr. Howitt.* \odot . 5—7.—*Stem* slender, $1\frac{1}{2}$ —2 ft. high. *Leaves* pale yellow-green, delicate. *Umbels* sessile, lateral, of few rays, pubescent. *Partial involucre*s of few, about 3, leaves, unilateral, linear. *Umbellules* small. *Fruit* large, perfectly glabrous, linear: *beak* about half as long as the fruit.

** *Fruit muricated.*

3. *A. vulgáris* Pers. (*common B.*) ; umbels stalked opposite the leaves, stem glabrous, leaves ternately decomposed, the segments obtuse, fruit ovately conical hispid about twice as long as the glabrous *beak*. *Scandix Anthriscus L.: E. B. t. 818.*

Waste places, by road-sides, especially near towns and villages. \odot . 5, 6.—*Stem* 2 ft. or more high, swelling under each joint. *Leaves* slightly hairy. *Partial umbels* small, with small *involucre*s. *Fruit* rather large, with a distinct furrow on each side which extends to the *beak*, covered with hooked bristles.

35. CHÆROPHÝLLUM Linn. Chervil. (Tab. III. f. 35.)

Fruit laterally compressed or constricted, with a very short *beak*. *Carpels* with 5 obtuse ribs, with a deep furrow on the inner face of the carpels. *Interstices* with single *vittæ*. *Cal-teeth* obsolete. *Pet.* obcordate, with an inflected point. (*Partial involucre of many leaves.*)—Named from $\chiαιρω$, to rejoice, and $\phiυλλον$, a leaf; hence comes our word *chervil*, applied to the cultivated *Anthriscus Cerefolium*, whose leaves have an agreeable smell.

1. *C. temuléntum* L. (*rough C.*) ; fruit glabrous with obtuse ribs, stem rough (spotted) swelling below each joint, leaflets ovate-oblong cut, partial involucre reflexed. *E. B. t. 1521.*

Hedges and eopses, common. δ . 6, 7.—*Stem* 3 ft. or more high, rough with hairs. *Leaves* doubly pinnate; *leaflets* pinnatifid

or inciso-lobate, the *segments* obtuse, mucronate. *Umbels* at first drooping. *Fruit* linear-oblong, striate.

2. *C. *aúreum* L. (*tawny-fruited C.*); pubescent, fruit with obtuse ribs coloured, stem slightly swelling below the joints, leaflets very acuminate inciso-pinnatifid. *E. B. t.* 2103.

Fields between Arbroath and Montrose; and near Corstorphine, Edinburgh. 4. 6.—*Stem* 3 ft. or more high, branched, aromatic. *Leaves* tripinnate; *leaflets* peculiarly attenuated, at least on the upper leaves (for the radical ones are more obtuse), a character which distinguishes this from every other British species.

3. *C. *aromaticum* L. (*broad-leaved C.*); fruit with obtuse ribs, leaves subternate bipinnate, leaflets ovate-oblong sub-acuminate serrate undivided. *E. B. t.* 2636.

By the side of a river called Lunan and Vennie near Guthrie, Forfarshire. 4. 6.—*Stem* 2—3 ft. high, slightly pubescent below, glabrous above. *Leaves* biternate; *leaflets* large, undivided or rarely with a small lobe near the base, pubescent beneath. In this, as well as in *C. aureum*, there is sometimes a small *general involucre*. No one has ever found this plant or the preceding, except the late Mr. G. Don, although the stations have been repeatedly searched.

36. MYRRHIS Tourn. Cicely. (Tab. III. f. 36.)

Fruit laterally compressed, with scarcely any beak; suture with a deep furrow. *Carpels* of 2 membranes, deeply furrowed with 5 very prominent acute ribs, and a hollow under them. *Vittæ* none. *Cal.-teeth* obsolete. *Pet.* obcordate with an inflexed point. (Partial involucre of many leaves. Many of the partial umbels abortive.)—Name: perhaps derived from μυρρῆα, *myrrh*; the foliage of one species at least possessing an agreeable scent.

1. *M. *odoráta* Scop. (*sweet C.*); leaves somewhat villous beneath partial involucre lanceolate-subulate. *Scandix* L.: *E. B. t.* 697.

Pastures in mountainous countries, especially in the north of England and Lowlands of Scotland, generally near houses. 4. 5, 6.—Whole plant highly aromatic, 2 ft. and more high. *Leaves* large triply pinnate; *leaflets* pinnatifid, ovate-lanceolate, inciso-serrate. Many of the *partial umbels* of this species, especially the inner ones, and sometimes even entire *umbels*, prove abortive. The *fruits* are remarkable for their large size and powerful fragrance.

G. *Fruit clothed with prickles or with a prickly involucre.*
(Gen. 37—40.)

37. DAUCUS Linn. Carrot. (Tab. III. f. 37.)

Fruit dorsally compressed, elliptic-oblong. *Carpels* with 3

dorsal ribs and two on the inner face, bristly, the four interstices very prominent, and crowned with a single row of long flat prickles. *Albumen* solid. *Pet.* radiant, those of the ray deeply bifid. (*Involucres often pinnatifid.*)—Name: the *δαυκος* of Dioscorides.

1. *D. Caróta* L. (*wild C.*); prickles of the fruit slender distinct at the base, leaves tripinnate, leaflets pinnatifid, segments linear-lanceolate acute, umbels when in seed concave. *E. B. t.* 1174.

Pastures and borders of fields, very frequent. ♂. 6—8.—The origin of our *garden carrot*.

2. *D. marítimus* With. (*Sea-side C.*); prickles of the fruit usually flattened contiguous and united at the base, leaves tripinnate, leaflets pinnatifid lanceolate fleshy, segments rounded, umbels convex or flat when in seed.—*a.* petals entire white or tinged with red. *E. B. t.* 2560. *D. guminifer* Bab.—*β.* petals fringed greenish-yellow.

Sea-coast of Kent, Dorset, Devon, and Cornwall; Anglesea, Galloway, and Islands of Skye and Lisimore; Scotland. Ireland.—*β.* Dorset: *Prof. E. Forbes.* ♂. 7, 8.—Usually smaller than the preceding, with broader and more fleshy radical leaves, and in general with the prickles of the fruit shorter. But the two are scarcely permanently distinct.

38. CAÚCALIS Linn. Bur-Parsley. (Tab. III. f. 38.)

Fruit slightly laterally compressed. *Carpels* with the ribs (3 slender dorsal ones, and 2 on the inner face) bristly or prickly, with prominent secondary ribs between them bearing prickles; *vittæ* solitary below each secondary rib. *Albumen* involute. *Pet.* radiant; those of the ray deeply bifid. (*Involucres none, or 1—3-leaved.*)—Name: *καυκαλῖς* of the Greeks, according to Linnæus from *κεω*, to lie along, and *καυλος*, a stem; from their trailing along the ground.

* Prickles of the secondary ribs in a single row, longer than the bristles of the fruit.

1. *C. daucoídes* L. (*small B.*); leaves bi-tripinnatifid, segments short, umbels of few rays, general involucre none, partial umbels of few flowers, their involucres of about 3 small leaves, prickles of the secondary ribs hooked. *E. B. t.* 197.

Corn-fields, on a chalky soil, principally in the east and south-east of England. ☉. 6.—*Peduncles* lateral and terminal. General and partial umbels of about 3 rays.

** *Prickles of the secondary ribs in 2—3 rows similar to those of the others.* *Turgenia*.

2. *C. *latifolia* L. (*great B.*); hispid, leaves pinnate, leaflets decurrent pinnatifid and serrate, leaves of the involucre ovate membranous, prickles on the fruit all retrorsely scabrous. *E. B. t.* 198. *Turgenia Koch.*

Fields in a chalky soil, rare. Formerly abundant in Cambridge-shire, but now extinct there. ☉. 7.—A very striking plant, and entirely different from the preceding. *Leaves* broad for this tribe of *Umbelliferae*, and comparatively little divided. General and partial umbels with about 3—5 rays, and about as many leaves to the involucre. *Flowers* rose-coloured, large; *fruit* large, and abundantly aculeate.

39. *TORILIS* Adans. Hedge-Parsley. (Tab. III. f. 39.)

Fruit slightly laterally compressed. *Carpels* with 3 dorsal inconspicuous bristly ribs, and 2 on the inner face of the carpels; the interstices scarcely prominent, clothed with prickles, each with a single *vitta*. *Albumen* furrowed. *Pet.* obcordate, outer ones radiant. (Partial involucre of many leaves.)—Name of doubtful origin, perhaps, as Smith suggests, from *τορεω*, to carve, or emboss; in allusion to the appearance of the fruit.

1. *T. Anthriscus* Gærtn. (*upright H.*); stem erect branched, leaves bipinnate, leaflets lanceolate inciso-serrate attenuate, umbels stalked terminal, involucre of many small subulate leaves. *Caucalis Huds.*: *E. B. t.* 987.

Hedges and waste places. ☉. 7—9.—*Stems* 2—3 ft. high. *Fruit* densely clothed with incurved, but not hooked, scabrous bristles.

2. *T. infesta* Spr. (*spreading H.*); leaves bipinnate, leaflets ovate inciso-pinnatifid serrate, umbels stalked terminal, general involucre wanting or of one, partial of few subulate leaves. *Caucalis Curt.*: *E. B. t.* 1314.

Fields and way-sides common. ☉. 7—9.—*Fruit* with straight adpressed bristles on the primary ridges, and retrorsely scabrous spreading hooked ones on the interstices.

3. *T. nodosa* Gærtn. (*knotted H.*); stem prostrate, umbels lateral simple subsessile, fruit sometimes warted. *Caucalis Huds.*: *E. B. t.* 199.

Waste places by road-sides, frequent; especially in dry, gravelly, or chalky soils. ☉. 5—7.—*Leaves* bipinnate; *leaflets* ovate, pinnatifid, segments linear, acute, short. *Umbels* capitate, opposite the base of a leaf. *Flowers* reddish. *Outer fruits* of the umbel most bristly; *inner* ones partially tubercled. In this species the umbel is as simple as in the first section of the Order.

40. ECHINÓPHORA Linn. Prickly Samphire. (Tab. III. f. 40.)

Fruit ovate, lodged in a prickly receptacle, with a prickly involucre. *Carpels* with 5 depressed, waved and striate, equal smooth ribs, and simple *vittæ* in the interstices which are covered with a cobweb-like membrane. *Albumen* involute. *Pet.* obcordate, with an inflected point. (Involucres *many-leaved*.)—Name derived from *ἐχινός*, a *hedgehog*, and *φέρω*, to *bear*; in reference to the prickly nature of the plant.

1. E. **spinósa* L. (*Sea-side P.*, or *Sea-Parsnep*); leaves bipinnatifid, the segments trifid subulate spinous, involucres entire spinous. *E. B. t.* 2413.

Sandy sea-shores, Lancashire and Kent. 4. 7.—A very prickly and singular plant, now, we fear, quite lost as a native of Britain. The flowers of the circumference have stamens only, and at length unite by the base, and surround the solitary central fertile one like an involucre.

ORD. XXXIX. ARALIACEÆ Juss.

Calyx-tube adnate in whole or in part with the *ovary*, entire or cleft. *Petals* 4—10, rarely cohering, or none; *æstivation* valvular. *Stamens* equal in number to the petals or twice as many, from the margin of an epigynous disk. *Ovary* 2- or more celled: *ovules* solitary pendulous. *Styles* as many as cells. *Stigmas* simple. *Fruit* fleshy or dry, of several 1-seeded cells. *Seed* with a fleshy *albumen*, and a minute *embryo*.—Trees, shrubs, or herbs; *nearly allied to Umbelliferæ*. *Panax* affords the *Ginseng*.

1. ADOXA. Corolla monopetalous, rotate. Stem slender, herbaceous.
2. HEDERA. Corolla of 5 petals. Stem woody.

1. Adóxa Linn. Moschatel.

Cal. half-inferior, 3-cleft. *Cor.* superior, rotate, 4—5-cleft. *Stam.* 8—10, inserted by pairs, each bearing a 1-celled *anther*. *Berry* 4—5-seeded. (The side-flowers have the corolla 5-cleft, the terminal one 4-cleft.)—Name: from *α*, *without*, and *δοξα*, *glory*; from the humble and insignificant aspect of this little flower.

1. A. Moschatéllina L. (*tuberous M.*): *E. B. t.* 453.

Woods, hedge-banks, and shady places; not unfrequent at a great elevation and even near the tops of Highland mountains. 4. 4, 5.—*Rhizome* composed of tooth-like scales, creeping. *Stem* about a span high. *Leaves* 2—3, radical, on very long *footstalks* triternate, lobed and cut, 2 cauline ones small and simply ternate. *Peduncles*

terminal, with a head of 4 verticillate *flowers* and a fifth terminal one. *Stamens* united in pairs; or they may be considered as 4—5 forked *stamens*, each division terminated by the single cell of an *anther*, and all springing from a fleshy ring that surrounds the upper part of the *germen*.

2. *HÉDERA* Linn. Ivy.

Cal. of 5 teeth. *Pet.* 5, distinct, broadest at the base. *Stam.* 5—10. *Style* simple, or 5—10 more or less combined. *Berry* with 3—10 *seeds* crowned by the calyx.—Name supposed to be from *ἔδρα*, a *seat*; from its clinging to or *sitting* upon old walls, &c.

1. *H. Hélix* L. (*common I.*); leaves coriaceous ovate or cordate and 3—5-lobed, lobes angular, umbel simple pubescent erect. *E. B. t.* 1267.

Hedges, woods, old buildings, or rocks and trunks of trees, frequent. *h.* 10, 11.—*Stems* very long throwing out numerous fibres, by which they adhere to hard substances. *Leaves* very shining dark green, often veined with whitish lines. *Flowers* small, pale-green. *Cal.-teeth* extremely minute. *Pet.* reflexed. *Berries* smooth and black.

ORD. XL. CORNACEÆ De Cand.

Calyx-tube adnate with the *ovary*; *limb* 4—5-toothed and minute, or 4—5-lobed and valvate in æstivation. *Pet.* 4, broad at the base; æstivation valvular. *Stamens* 4, inserted with the petals, alternate with them. *Style* filiform. *Stigma* simple. *Ovary* usually 2-celled: *ovules* solitary, pendulous. *Drupe* with a 1—2-celled *nucleus*. *Seeds* with a fleshy *albumen*, and an *embryo* nearly its length.—Trees or shrubs, rarely herbs. Leaves (*except in one species*) *opposite*, and as well as the fruit, *beset with adpressed hairs attached by the middle*. Bark tonic.

1. *CÓRNUS* Linn. Cornel. Dogwood.

Cal. of 4 teeth. *Petals* 4, superior. *Stam.* 4. *Nut* of the drupe with 2 cells and 2 *seeds*.—Named from *cornu* (*keren* in Hebrew), a *horn*; owing to the hard nature of the wood, of which javelins were made.

1. *C. sanguinea* L. (*wild C. or D.*); arborescent, branches straight, leaves opposite ovate green on both sides, cymes flat destitute of involucre. *E. B. t.* 249.

Woods and thickets, particularly on a chalk or limestone soil; scarcely wild in Scotland. *h.* 6, 7,—*Stem* 5—6 ft. high. *Bark* in the older *branches* dark red, as are the leaves before they fall; these are strongly nerved, entire, slightly hairy beneath. *Cymes* of numerous white *flowers* at the ends of the branches.

2. *C. Succica* L. (*dwarf C.*) ; herbaceous, leaves all opposite ovate glabrous sessile, flowers few umbellate surrounded by a 4-leaved petaloid involucre. *E. B.* t. 310.

Alpine pastures in Northumberland and Scotland, especially in turf bogs on the Highland mountains. 4, 7, 8.—*Rhizome* creeping. *Stems* about six inches high. *Umbel* terminal, from the axil of 2 young branches which do not exceed the general flower-stalk in height, till the fruit is ripe.

ORD. XLI. LORANTHACEÆ Juss.

Stamens and *pistils* often separated. *Calyx-tube* adnate with the *ovary*, bracteate at the base ; its *limb* entire or lobed. *Corolla* of 4—8 *petals*, or monopetalous, with a valvular æstivation. *Stamens* as many as divisions of the *corolla* and opposite to them. *Ovary* 1-celled. *Ovule* solitary, pendulous. *Style* 1 or none. *Stigma* simple. *Fruit* inferior, succulent. *Albumen* fleshy.—*Parasitical, mostly tropical* Shrubs. Leaves *entire, generally opposite, thick and fleshy, without stipules*.—The seed sometimes contains 2 or even 3 embryos.

1. VISCUM Linn. Mistletoe.

Barren fl. *Cal.* obsolete. *Pet.* 4, ovate, fleshy, united at the base and bearing each a single anther adnate with the upper surface.—*Fertile fl.* *Cal.* an obscure margin, superior. *Pet.* 4, erect, ovate, very minute. *Stigma* sessile.—Name : *ἔνος*, Greek ; from *gwid*, Celtic, *the shrub*, par excellence, a sacred plant with our ancestors.

1. *V. album* L. (*common M.*) ; leaves obovate-lanceolate obtuse obscurely 3—7-nerved, branches dichotomous or verticillate, heads of flowers in the axils of an upper pair of leaves. *E. B.* t. 1470.

Parasitic, mostly on apple trees, very seldom on the oak ; frequent in the southern parts of England. On *Acer campestre* in Gloucestershire and on Lime-trees and Locust-trees (*Robinia Pseudo-Acacia*) in Bedfordshire. Meikleour and Belmont, Perthshire (introduced). 12. 3—5.—Whole plant of a yellow hue, thick and succulent.

B. COROLLA MONOPETALOUS.¹ (ORD. XLII.—XLIX.)

ORD. XLII. CAPRIFOLIACEÆ Juss.

Calyx-tube adnate with the *ovary*, usually bracteate at the base. *Corolla* regular or irregular ; the segments imbricated in æstivation. *Stamens* 4—5, alternate with the lobes of the

¹ The monopetalous orders with a free ovary will be found among the COROLLIFLOREÆ ; and CUCURBITACEÆ among the polypetalous division.

corolla. *Stigmas* 3—5 and nearly sessile, or subcapitate at the extremity of a filiform *style*. *Ovary* 3—5-celled, several cells sometimes obliterated. *Fruit* generally a *berry*, 1- or many-celled, 1- or many-seeded, crowned with the persistent lobes of the calyx. *Albumen* fleshy.—Shrubs or Herbs. Leaves *opposite*, *entire and then without stipules, or rarely divided*. Bark *astringent*; the flowers of *Sambucus* are *purgative*.

* *Stigmas* 3, *sessile*.

1. *SAMBUCUS*. Cor. rotate. Berry 3—4-seeded. Leaves pinnate.
2. *VIBURNUM*. Cor. campanulate or funnel-shaped. Berry 1-seeded. Leaves entire or lobed (never pinnate).

** *Style* 1, *filiform, with a subcapitate stigma*.

3. *LONICERA*. Cor. limb irregular. Stam. 5.
4. *LINNÆA*. Cor. limb nearly regular. Stam. 4, *didynamous*.

1. *SAMBUCUS* Linn. Elder.

Cal.-limb 5-cleft. *Cor.* rotate, 5-lobed. *Stam.* 5. *Stigmas* 3, sessile. *Berry* 3- or 4-seeded. (Leaves *pinnate*.)—Named from *σαμβυκη*, a musical instrument, in the construction of which this wood is said to have been employed.

1. *S. Ebulus* L. (*dwarf E. or Dane-wort*); cymes with 3 principal branches, leaflets lanceolate, stipules foliaceous, stem furrowed herbaceous. *E. B. t.* 475.

Way-sides, and in waste places, not uncommon. 4. 7. 8.—*Stem* 2—3 ft. high, angular and furrowed. *Leaves* pinnate; *leaflets* serrate. *Cymes* large, terminal, purplish. *Anthers* large, purple. *Berries* spherical, black.—The plant has a fetid smell, and is violently purgative.

2. *S. nigra* L. (*common E.*); cymes with 5 principal branches, leaflets ovate or roundish, stipules obsolete, stem arborescent.—*a.* leaflets serrate. *E. B. t.* 476.—*β.* leaflets lacinate.

Woods, coppices, &c., frequent.—*β.* Leicestershire, and near Ayr. h. 6.—A small tree, having the stems and branches full of pith. *Leaves* pinnate; *leaflets* serrate or lacinate. *Cymes* terminal, large, cream-coloured, smelling unpleasantly.

2. *VIBURNUM* Linn. Guelder-rose.

Cal.-limb 5-cleft. *Cor.* campanulate or funnel-shaped, 5-lobed. *Stam.* 5. *Stigmas* 3, sessile. *Ovary* when very young 3-celled, during flowering 1-celled and 1-ovuled. *Berry* inferior, 1-seeded. (Leaves *simple*.)—Name of doubtful origin.

1. *V. Lantana* L. (*mealy G., or Wayfaring-tree*); leaves elliptic with a cordate base serrate veined downy beneath, pubescence stellate. *E. B. t.* 331.

Woods and hedges, especially in a chalky or limestone soil. Dunglass glen, Scotland. *h.* 5, 6.—A large *shrub*, much branched, the young shoots very downy. *Flowers* in large dense *cymes*, white. *Cal.-teeth* very minute. *Berry* purplish-black.

2. *V. Opulus* L. (*common G.*); leaves glabrous 3—5-lobed, lobes acuminate and serrate, petioles with glands. *E. B.* t. 332.

Woods and coppices, not unfrequent in England and Scotland. *h.* 6, 7.—A small *tree*, very glabrous. *Leaves* large, subcordate broad. *Cymes* large, with white *flowers*; the perfect ones small and resembling the last; abortive ones in the circumference, consisting of a very large, plane, 5-lobed *corolla*, without either *stamens* or *pistil*. *Flowers* erect. *Berries* reddish-purple, drooping.

3. LONICERA Linn. Honey-suckle.

Cal.-limb small, 5-toothed. *Cor.* tubular or somewhat funnel-shaped, the limb irregular, 5-cleft. *Stam.* 5. *Style* filiform. *Stigma* capitate. *Berry* 1—3-celled, few-seeded.—Named in honour of *Adam Lonicer*, a German botanist.

1. *L. *Caprifolium* L. (*pale perfoliate H.*); flowers ringent whorled terminal sessile, leaves deciduous glabrous obtuse, upper ones connate perfoliate, style glabrous. *E. B.* t. 799.

Woods and thickets rare. Oxfordshire and Cambridgeshire. In Colinton woods and on Corstorphine hill near Edinburgh, and in hedges at Dalmeny, Linlithgowshire. *h.* 5, 6.—*Berries* smooth, of an orange-colour.

2. *L. Periclymenum* L. (*common H., or Woodbine*); heads stalked, flowers ringent capitate terminal, leaves all distinct deciduous oval. *E. B.* t. 800.

Frequent in woods and hedges. *h.* 6—9.—*Berries* red.

3. *L. *Xylosteum* L. (*upright Fly H.*); peduncles 2-flowered downy as long as the flowers, berries distinct except at the base, calyx-limb deciduous, leaves ovate entire downy. *E. B.* t. 916.

Thickets, Hertfordshire. Near Sewing Shields, Northumberland. Houghton Bridge, near Arundel, Sussex. *h.* 5, 6.—An erect *shrub*, with pale, yellowish, small, scentless, *flowers*, succeeded by bright scarlet *berries*. There being no allied species in this country, we can scarcely suppose that this has not been accidentally naturalized by man or birds.

4. LINNÆ'A Gronov. Linnæa.

Cal.-limb 5-cleft. *Cor.* campanulate, 5-cleft, equal. *Stam.* 4, didynamous. *Fruit* a dry, 3-celled *berry*, with one cell only bearing a perfect *seed*. *Involucre* of about 4 leaves at the base of the *germen*.—Name. It was this "little northern plant

long overlooked, depressed, abject, flowering early," which Linnæus himself selected as therefore most appropriate to transmit his name to posterity. *Sm.*

1. *L. boreális* Gronov. (*two-flowered L.*): *E. B.* t. 433.

Woods in Scotland, especially of fir, more rarely in open rocky and mossy situations, chiefly in the counties of Perth, Forfar, Inverness, and Aberdeen. Rare and perhaps only naturalized to the south of the Tay; banks of the Esk, at Dalhousie. Hartburn, Northumberland. 4. 7.—*Stem* trailing, filiform, branched. *Leaves* opposite, broadly ovate, stalked, obscurely crenate. *Peduncles* axillary, long, erect, 2-flowered, or occasionally from luxuriance 3—4-flowered. *Flowers* fragrant, graceful, drooping; *pedicels*, *bracteas*, *involucre*, globose *germen*, and *calyx*, all clothed with glandular hairs.

ORD. XLIII. RUBIACEÆ *Juss.*

Calyx adherent with the *ovary*, entire or toothed at the margin. *Corolla* regular. *Stamens* inserted upon the corolla and between its divisions. *Style* 1. *Ovary* 1, with 2 or more cells. *Embryo* straight, surrounded by a horny *albumen*. *Radicle* inferior.—*Leaves* opposite with *interpétiole* stipules, or *whorled*.—A most important natural family. All the species found in Europe belong to the group called *Stellatæ* or *Rubiaceæ* proper, and have, besides the above characters, a 4—5-lobed corolla, valvular in æstivation, 4—5 stamens, a bipartite or bifid style, 2 capitate stigmas, a 2-celled 2-seeded pericarp, and slender herbaceous square stems with whorled leaves: their roots yield a dye. Those individuals having woody, or shrubby, rarely herbaceous stems, and opposite and stipuled leaves, afford *Peruvian bark*, in the various species of *Cinchona*; *gambecr*, in *Nauclea*; a febrifuge, in *Condaminea* and *Rondeletia*; powerful emetics, in *Psychotria* and *Cephaelis*, especially *C. Ipecacuanha*, which is the true or *Brazilian ipecacuanha*, in *Spermacoce* and *Richardsonia*: these, together with *Coffea*, the *coffee-tree*, &c., are natives of warm climates.

1. RUBIA. Cor. rotate, 5-cleft. Fruit succulent.
2. GALIUM. Cor. rotate, 4-cleft. Fruit dry, not crowned with the calyx.
3. SHERARDIA. Cor. funnel-shaped. Fruit dry, crowned with the calyx.
4. ASPERULA. Cor. funnel-shaped. Fruit dry, not crowned with the calyx.

1. RÚBIA *Linn.* Madder.

Cor. rotate or campanulate or funnel-shaped, 4—5-cleft. *Stam.* 4—5. *Fruit* a 2-lobed berry. — Named from *ruber*, red; from the red dye afforded by its species, especially *Rubia tinctorum*, which produces the true madder, or *Turkey-red* of commerce.

1. *R. peregrina* L. (*wild M.*); leaves 4—6 in a whorl elliptic or lanceolate persistent glossy, the margin and keel rough with reflexed prickles, corolla rotate 5-cleft. *E. B. t.* 851.

Stony and sandy ground in the south-west of England. Isle of Wight. Anglesea. φ . 6—8.

2. GÁLIUM Linn. Bed-straw.

Cor. rotate, 4-cleft. *Stam.* 4. *Fruit* a dry, 2-lobed, indehiscent *pericarp*, without any distinct margin to the calyx.—Named from γάλα, *milk*; the plant having been used to curdle milk.

* *Root* perenniat. *Flowers* yellow. *Fruit* glabrous.

1. *G. vérum* L. (*yellow B.*); leaves about 8 in a whorl linear with revolute margins grooved above, downy beneath, flowers in dense panicles. *E. B. t.* 660.

Dry banks, sandy places, and sea-shores, common. φ . 6—9.—Readily distinguished by its yellow *flowers* and linear deflexed *leaves*. According to Lightfoot the inhabitants of some of the Western Isles employ the roots, and principally the bark of them, to dye red; hence the name for the plant *ruadh* or *ruddy*.

2. *G. cruciatum* With. (*Cross-wort B.*, or *Mug-wort*); leaves 4 in a whorl ovate 3-nerved hairy, flowers polygamous in small axillary corymbs, peduncles 2-leaved. *E. B. t.* 143.

Hedge-banks and thickets, common. φ . 4—6.—*Lateral* flowers of each corymb mostly male, fertile ones often 5-cleft; *fruitstalks* deflexed.

** *Root* perennial. *Flowers* white. *Fruit* glabrous.

3. *G. saxatile* L. (*smooth Heath B.*); leaves about 6 (6—8) in a whorl obovate or linear mucronate, stem much branched smooth usually prostrate, panicles corymbose small, pedicles erecto-patent, petals slightly acute, fruit more or less granulated.— α . midrib of leaves slender. *E. B. t.* 815.— β . midrib of leaves thick and prominent. *G. montanum* Bab.— γ . leaves narrower, midrib broad not prominent. *G. commutatum* Jord.

Heathy spots and hilly and mountainous pastures, abundant.— β . Settle.— γ . Teesdale. φ . 6—8.—*Plant* generally turning nearly black (β . remains green) in drying, usually small, but occasionally growing among grass and rushes in swampy places, and then almost a foot high and sometimes mistaken for *G. uliginosum*. *Leaves* often rough at the margins, of a thickish and rather soft texture.

4. *G. pusillum* L. (*least Mountain B.*); leaves about 8 in a whorl linear-lanceolate hair-pointed entire lower ones somewhat hairy, stem spreading without prickles, panicles terminal few-

flowered, pedicels erecto-patent, fruit obscurely granulated, petals somewhat acute. *E. B. t.* 74. *G. sylvestre* *Poll.*

Limestone hills in various parts of England; Cheddar Cliffs, Somerset; near Kendal; about Matlock, Derbyshire; near Settle, Yorkshire; also in the counties of Stafford, Laneaster, and Cumberland. Basaltic rock, Antrim; and near the lake of Killarney, Ireland. Ochills, Strathblane hills, Forfarshire mountains, and Orkney, Scotland. *4.* 7, 8.—Too closely allied to *G. saxatile*, from which it is scarcely to be distinguished except by the more pointed leaves.

5. *G. uliginosum* L. (*rough Marsh B.*); leaves 6—8 in a whorl linear-lanceolate bristle-pointed, their margins and the stem rough with reflexed prickles. *E. B. t.* 1972.

Wet meadows and sides of ditches. *4.* 7, 8.—*Panicles* small, axillary, few-flowered; *branches* erecto-patent. *Fruit* dark-brown, granulated, its stalks erect. Distinguished from the next by the narrow leaves, shortly acuminate at their points into a mucro. It does not turn black in drying.

6. *G. palustre* L. (*white Water B.*); leaves 4—6 in a whorl oblong-lanceolate obtuse tapering at the base and as well as the lax spreading branched stem more or less rough, panicles diffuse, fruit-stalks divaricated.—*α.* stem and leaves smoothish. *G. palustre* L.: *E. B. t.* 1857. *G. elongatum* *Presl.*—*β.* nerves at the back and margins of the leaves and angles of the stem distinctly rough with mostly reflexed prickles. *G. Witheringii* *Sm.*: *E. B. t.* 2206.

Sides of ditches, lakes, and rivulets. *4.* 7, 8.—*G. palustre* L. is smaller in all its parts, and has smoother fruit than Smith's plant (*G. elongatum*); but the two do not differ in any essential degree.

7. *G. erectum* Huds. (*upright B.*); leaves 6—8 in a whorl lanceolate mucronate their margins rough with prickles pointing forward, branches of the panicle all ascending, stem flaccid, segments of the corolla taper-pointed, fruit-stalks divaricated.—*α.* leaves lanceolate reticulated with veins. *E. B. t.* 2067. *G. aristatum* *Sm.*: *E. B. S. t.* 2784.—*β.* leaves narrower, scarcely veiny. *G. diffusum* *Don.* *G. cinereum* *Sm.* (not *All.*): *E. B. S. t.* 2783.

Hedges and pastures, not common. In Norfolk; at Portslade, Sussex; and near Cambridge. Portobello, Dalmahoy, and Slateford, near Edinburgh; wood, west of Kinnaird mill, Forfarshire.—*β.* Slateford, near Edinburgh; Kinnaird, Forfarshire. *G. Don.* *4.* 6.—In all the specimens we have seen the stem is hairy at the very base, but it is sometimes quite glabrous above, although in England it is usually hairy there also, at least on the angles.

8. *G. Mollúgo* L. (*great Hedge B.*); leaves 6—8 in a whorl

oblong-lanceolate or obovate mucronate rough at the margin with prickles pointing forward and lower branches of the panicles spreading horizontally, stem flaccid, segments of the corolla taper-pointed, fruit-stalks divaricated.—*α*. stem glabrous, leaves oblong-lanceolate, floral ones small. *E. B. t.* 1673.—*β*. stem and leaves hairy.—*γ*. stem glabrous, leaves obovate, floral ones large. *G. Insubricum Gaud.*

Hedges and thickets, less frequent in Scotland. — *γ*. Winander Mere: *Rev. C. A. Stevens.* 4. 7, 8.—Stems very long and straggling, thickened above the joints. Small specimens of this have sometimes the panicle close, when they cannot be distinguished from *G. erectum*, a species it must be confessed not satisfactorily distinct. Dr. Bromfield found a *var.* in the Isle of Wight with greenish flowers.

*** *Root perennial. Flowers white. Fruit hispid.*

9. *G. boreale* L. (*Cross-leaved B.*); leaves 4 in a whorl lanceolate 3-nerved glabrous, stems erect, fruit covered with hooked bristles. *E. B. t.* 105.

Moist rocks, frequent in the north of England, Wales, and Ireland. 4. 6—8.—In very shady places and clefts of rocks, the stems are long and straggling. Flowers numerous, crowded, white. Bristles of the fruit hooked.

**** *Root annual. Flowers white or greenish.*

10. *G. Parisiense* L. (*Wall B.*); leaves about 6 in a whorl lanceolate bristle-pointed rough at the margins with prickles pointing forwards, peduncles axillary their branches divaricated slender subtrichotomous, stems slender rough with decurved prickles.—*α*. fruit hispid. *G. Parisiense* L. *G. litigiosum* DC.—*β*. fruit glabrous granulated. *G. Anglicum Huds. : E. B. t.* 384.

β. Walls and dry sandy soil, rare; in Kent and various parts of the east and south-east of England, especially on old walls. ☉. 6, 7.

11. *G. *saccharatum* All. (*warty-fruited B.*); leaves 6 in a whorl lanceolate their margins rough with prickles pointing forward, peduncles axillary 3-flowered, fruit reflexed warted. *G. verrucosum E. B. t.* 2173. *Valantia Aparine Linn.*

Corn-fields, rare. Carse of Gowrie, and Forfar, Scotland. Near Malton, Yorkshire. ☉. 6—8.—Prickles of the stem reflexed. The two lateral flowers on each peduncle are sterile and fall away one from each side of the large warted fruit, which, together with the marginal prickles of the leaves pointing forwards, essentially distinguish this species from *G. tricornis*. Probably introduced with seed-corn; it has not been found for many years.

12. *G. *spurius* L. (*smooth-fruited Corn B.*); leaves 6—8 in

a whorl linear-lanceolate their margins midrib as well as the angles of the stem rough with reflexed prickles, peduncles axillary 3—9-flowered, fruit smooth or hispid, the stalks divaricated straight. — *α*. fruit smooth. *E. B. t.* 1871. — *β*. fruit hispid. *G. Vaillantii D C. : E. B. S. t.* 2943.

Fields of corn, clover, and potatoes, rare. — *α*. Near Forfar. — *β*. Saffron Walden and Chesterford, Essex. ☉. 7. — Allied to the 2 last species in its short axillary peduncles, but in general habit coming so near to *G. Aparine*, that our var. *β*. is scarcely to be distinguished. *G. spurium* however has small yellowish-green (not white) flowers, a small less hispid fruit, and it does not climb hedges. In general *G. spurium* has numerous flowers on erect peduncles, but sometimes only 3; while *G. Aparine* has usually only 2 or 3, but sometimes more; so that no character can be derived from these. We are therefore of opinion that they differ by too few characters to be distinct species.

13. *G. tricórne* With. (*rough-fruited Corn B.*); leaves 6—8 in a whorl linear-lanceolate their margins midrib and angles of the stem rough with reflexed prickles, peduncles axillary 3-flowered, fruit reflexed granulated. *E. B. t.* 1641.

Dry chalky fields in many counties in England. ☉. 6—10. — *Flowers* all apparently perfect, but the central one only usually fertile.

14. *G. Aparine* L. (*Goose-grass, or Cleavers*); leaves 6—8 in a whorl linear-lanceolate hispid their margins midrib and angles of the stem very rough with reflexed prickles, peduncles axillary about 3-flowered, the stalks divaricating straight, fruit hispid. *E. B. t.* 816.

Hedges, abundant. ☉. 6, 7. — *Stem* weak, straggling, and climbing among bushes; rarely in corn-fields or on the sea-shore, and then as small as *G. spurium*. *Flowers* white, usually 2 or 3 together, sometimes 5, on rather short footstalks arising from the axils of the leaves. *Bristles* of the fruit hooked, which by their means catches hold of the coats of animals and is widely dispersed.

3. SHERÁRDIA Linn. Sherardia, or Field-Madder.

Cor. funnel-shaped. *Stam.* 4. *Fruit* dry, crowned with the cal.—Named in honour of James Sherard, an English botanist and patron of that science, whose fine garden at Eltham in Kent gave rise to the famous "*Hortus Elthamensis*" of Dillenius.

1. *S. arvénis* L. (*blue S.*); leaves about 6 in a whorl, flowers terminal sessile capitate. *E. B. t.* 891.

Corn-fields, or pastures especially in a light gravelly soil, frequent. ☉. 4—10.—A small, slender, branched and spreading plant. *Leaves* obovate-lanceolate, acute, their margins rough, upper ones 7—8, forming

an involucre to a small sessile *umbel* of pale blue *flowers*. *Cal.* of 4 segments, two opposite ones bifid; these bifid ones correspond to the line where the *fruit* divides into two 1-seeded portions, each of which is crowned with 3 teeth, one being the single tooth or segment of the *cal.*, the other two, each half of a double one.

4. *ASPÉRULA* Linn. Woodruff.

Cor. funnel-shaped. *Stam.* 4. *Fruit* dry, without any distinct margin to the *cal.*—Named from *asper*, *rough*; owing to the roughness of some species of the genus.

1. *A. odoráta* L. (*sweet W.*); leaves 6—8 in a whorl lanceolate, flowers panieled on long stalks, fruit hispid. *E. B.* t. 755.

Woods and shady places, plentiful. *ꝯ.* 5, 6.—About 6 inches high, erect. *Flowers* white. Whole plant very fragrant, like *Anthoranthum*, especially when drying.

2. *A. Cynánchica* L. (*small W.*, or *Squinancy-wort*); leaves linear 4 in a whorl very irregular in the uppermost whorls, flowers corymbose, corolla seabrous, fruit granulated seabrous. *E. B.* t. 33.

Warm banks, especially in chalky countries. Limestone rocks, Swansea, S. Wales. Not found in Scotland. *ꝯ.* 6, 7.—*Flowers* generally lilac. One pair of the leaves in the uppermost whorl is reduced to small lanceolate *stipules*.

3. *A. * arvénis* L. (*Field W.*); annual, leaves 6—10 in a whorl linear-lanceolate obtuse, flowers aggregate terminal surrounded by long ciliated braeteas, fruit glabrous. *E. B. S.* t. 2792.

Near Devonport, now extinct. *☉.* 6.—*Flowers* bright blue. *Fruit* large and very conspicuous.

[*A. Taurina* L. is mentioned as naturalized in Leicestershire and Westmoreland.]

ORD. XLIV. VALERIANACEÆ Juss.

Calyx-tube adnate with the *ovary*; the *limb* toothed, or a thickened margin at the top of the ovary, at length unfolding into a feathery *pappus*. *Corolla* with 3—6 lobes. *Ovary* with 1 perfect cell and often 2 or 3 abortive ones. *Fruit* dry, indehiscent, 1-seeded. *Seed* pendulous.—Leaves *opposite*, without *stipules*.—Tonic and bitter herbs; the roots, used as vermifuges, have a powerful scent; those of *Nardostachys Jatamansi* constitute the *spikenard* of the ancients.

1. CENTRANTHUS. *Stam.* 1. *Cor.* spurred. *Fruit* with a feathery pappus.
2. VALERIANA. *Stam.* 3. *Cor.* gibbous. *Fruit* with a feathery pappus.
3. FEDIA. *Stam.* 3. *Cor.* gibbous. *Fruit* crowned with unequal teeth.

1. CENTRANTHUS *De Cand.* Spur-Valerian.

Cor. 5-cleft, spurred at the base. *Stam.* 1. *Fruit* crowned with a feathery pappus.—Named from *κεντρον*, a spur, and *ανθος*, a flower.

1. *C. *rúber* DC. (*Red S.*); leaves ovate-lanceolate, spur much shorter than the tube of the corolla and twice as long as the ovary. *Valeriana* L.: *E. B.* t. 1531.

Chalk-pits and old walls in Kent, Isle of Wight, &c. *℥.* 6—9.—*Stem* 1 ft. or more high, glabrous, slightly glaucous. *Leaves* entire or slightly toothed. *Flowers* fine deep rose colour or white, arranged in numerous unilateral cymose spikes. Its native country is the extreme south of Europe, and N. of Africa.

[*C. Calcitrapa* Dufr. has been naturalized at Eltham in Kent.]

2. VALERIÁNA *Linn.* Valerian.

Cor. 5-cleft, gibbous at the base. *Stam.* 3. *Fruit* crowned with a feathery pappus.—Named from *valeo*, to be powerful; on account of the medicinal effects.

1. *V. dioica* L. (*small marsh V.*); flowers imperfectly diæcious, root-leaves ovate-spathulate stalked, those of the stem lyrate-pinnatifid, fruit glabrous. *E. B.* t. 628.

Marshy meadows, frequent. *℥.* 5, 6. — *Rhizome* creeping. *Stem* 6—8 inches high. *Leaves* more or less serrate. *Flowers* of a pale rose-colour.

2. *V. officinális* L. (*great wild V.*); stem sulcate stoloniferous, leaves all pinnatifid, leaflets lanceolate nearly uniform. *E. B.* t. 698.—*α.* petioles erecto-patent, leaflets 7—10 pairs dentato-serrate or entire. *V. procurrens* Wallr. *V. angustifolia* Tausch. —*β.* lower and middle petioles erect close-pressed, leaflets 4—5 pairs dentato-serrate. *V. sambucifolia* Mik.

Ditches, sides of rivers and moist woods, abundant. *℥.* 6—8. — *Roots* tuberous, warm, aromatic, and employed in medicine; cats are very fond of them, and their scent attracts rats. The leaves are much used by the poor as an application to fresh wounds, whence the common name of *All-heal*. *Whole plant* 2—4 ft. high. In our British forms the *stems* are perhaps always solitary from each root; but if *V. uliginosa* Wend. be also a *var.*, they are sometimes tufted. *Lower leaves* on long footstalks. *Flowers* pale flesh-coloured. *Fruit* glabrous or pubescent.

3. *V. *Pyrenáica* L. (*heart-leaved V.*); leaves heart-shaped dentato-serrate petiolate, upper ones with one or two pairs of small lanceolate leaflets. *E. B.* t. 1591.

Woods in Scotland. *℥.* 6, 7.—It is peculiar to the Pyrenees, but much cultivated in gardens; and the seeds are easily transported by the wind.

3. FÉDIA Vahl. (VALERIANELLA Moench.) Corn-Salad.

Cor. gibbous at the base; the limb 5-cleft. *Stam.* 2—3. *Caps.* crowned with unequal teeth, indehiscent, 3-celled, 1-seeded; 2 cells abortive or empty, rarely confluent. (*Limb* of *cor.* equal, and *stam.* 3 in all the British species.)—Name given by Adanson; and supposed to be derived from *fedus* (the same as *hædus*), a *kid*, on account of the smell.

* Fertile cell of fruit with a corky mass at the back.

1. *F. olitória* Vahl. (common *C.*, or *Lamb's Lettuce*); fruit laterally compressed oblique crowned with the 3 obscure inflexed teeth of the calyx, fertile cell corky at the back, sterile ones usually confluent, flowers capitate, bractæas leafy ciliatodentate. *Valeriana Locusta* L.: *E. B.* t. 811.

Banks and corn-fields, especially in a light soil. ☉. 4—6.—*Stem* 3 inches to a foot high, dichotomous, more or less rough. *Root-leaves* spatulate; those of the *stem* oblong, obtuse, entire or the upper ones a little toothed. *Flowers* pale blue, or rarely white, in terminal compact heads, at the base of which are linear-oblong often divided *bractæas* forming a kind of *involucre*.—Frequently cultivated as a salad.

** Fertile cell not corky at the back.

† Empty cells conspicuous contiguous.

2. *F. carinata* Stev. (*carinated C.*); capsule oblong with a wide usually concave groove in front glabrous crowned with the short straight bluntish limb of the calyx, the two empty cells thin and incurved at the edge, cymes capitate. *E. B. S.* t. 2810.

Hedge-banks, rare. Devon; Kent; Church Stretton, Shropshire; Askrigg, Yorkshire; and between Gresford and Wrexham, Denbighshire; Jersey. ☉. 4—6.

3. *F. Aurícula* Gaud. (*sharp-fruited C.*); capsule ovate acuminate, with a narrow groove in front glabrous crowned with the single entire or 3-toothed limb of the calyx, empty cells rounded on the back, larger than the fertile one, cymes lax.—*a.* calyx-limb nearly entire. *E. B. S.* t. 2809.—*β.* calyx-limb acutely 3-toothed. *F. tridentata* Stev. *Valerianella dentata* DC.

Corn-fields, in many parts of England; Isle of Wight. Jersey. Fifeshire.—*β.* Llandulph, Cornwall: *Rev. R. T. Bree*. ☉. 6—8.—Habit of the last species, for which it is no doubt often passed over; but the *fruit* is quite different, being broader and more inflated, obscurely furrowed in front, with large empty cells, and crowned with the small limb of the *calyx*.

†† *Empty cells distant, obsolete or reduced to mere ribs.*

4. *F. dentata* Vahl? (*smooth narrow-fruited C.*); capsule ovate flattish and 2-ribbed in front acuminate crowned with the prominent oblique unequally toothed cup-shaped limb of the calyx. — *α*. capsule glabrous, cup of the calyx small very oblique. *Valeriana Sm.: E. B. t. 1370. Valerianella Morisonii DC.* — *β*. capsule clothed with spreading incurved rigid hairs, cup of the calyx small oblique. *F. mixta Vahl.* — *γ*. capsule clothed with spreading incurved rigid hairs or glabrous, cup of the calyx large a little oblique. *F. eriocarpa Roem. et Sch.*

α. Corn-fields and hedge-banks, not very common. Cornwall, Essex, Shropshire, and Cambridgeshire. N. Wales. Fifeshire. Jersey. — *β*. Hedge-banks, near Halesworth, Suffolk; Yorkshire; Isle of Wight, Fifeshire. — *γ*. Ormeshead, Caernarvonshire. ☉. 6—8. — *Flowers* flesh-coloured, usually in panicle cymes. *Fruit* obpyriform; convex on the back where is the larger and perfect cell, nearly plane in front where are the two abortive cells, and these are shrunk so as to form two projecting lines or ribs. The whole fruit is glabrous or nearly so in *α*.; in *β*. and usually in *γ*. it is clothed with patent incurved short hairs. In *γ*. the cymes are usually dense, but Mr. W. Wilson has satisfied us that it is merely a state of this species; Mr. Borrer observes that it kept its peculiar habit six years in his garden. It is quite impossible, from Vahl's description, to pronounce whether this or *F. Auricula β*. be his *F. dentata*.

ORD. XLV. DIPSACACEÆ *Juss.*

Calyx-tube adnate with the *ovary*, surrounded by a scarioso *involucel* closely investing the ovary and ripe fruit. *Corolla* with the *limb* oblique, with an imbricative æstivation. *Stamens* 4—5; *anthers* distinct. *Ovary* 1-celled. *Style* 1, filiform: *Fruit* dry, indehiscent, 1-celled, with one pendulous *seed*, crowned with the pappus-like calyx. *Albumen* fleshy. — *Mostly* herbaceous plants, with *opposite* or *whorled* leaves. *Flowers* *pedicellate*, collected into a dense head which is surrounded by a many-leaved *involucre*. Nearly allied to the *Compositæ*. The *fuller's teasel* consists of the heads, with uncinatè spines, of *Dipsacus Fullonum*.

1. *DIPSACUS*. Receptacle with spinous scales. Cal.-limb cup-shaped. Fruit with 8 depressions.
2. *SCABIOSA*. Receptacle scaly. Cal.-limb of 4-5 bristles.
3. *KNAUTIA*. Receptacle hairy (not scaly). Cal.-limb cup-shaped. Fruit with 4 depressions.

1. *DIPSACUS* *Linn.* Teasel.

Receptacle with spinous scales. *Involucel* with a thickened limb, forming a *crown* to the ovary. *Cal.-limb* cup-shaped. *Stam.* distinct, about equal. *Fruit* 4-angled, with 8 pores or depres-

sions. (*Leaves* opposite.)—Named from $\delta\psi\alpha\omega$, to be *thirsty*; the upper connate leaves containing water in their hollows.

1. *D. *Fullónum* L. (*Fuller's T.*); leaves sessile undivided, scales of the receptacle hooked at the extremity, involucre spreading or reflexed. *E. B. t.* 2080.

Waste places and hedge-banks; rare. ♂. 8, 9.—*Stem* 4—5 ft. high, very angular and prickly. *Leaves* large oblong or oblong-lanceolate, obtusely or irregularly serrate, sometimes, especially the upper ones, connate. *Involucre* about as long as the head of flowers. *Flowers* in oval heads, pale purple or whitish.—Used in dressing cloth, for which purpose the hooked scales of the receptacle are admirably calculated. These hooks become obsolete by long cultivation on a poor soil; and there is reason to believe that *D. Fullonum* is but a var. of *D. sylvestris*.

2. *D. sylvestris* L. (*wild T.*); leaves sessile undivided, upper ones connate, scales of the receptacle straight at the extremity, involucre curved upward. *E. B. t.* 1032.

Road-sides and hedges, not rare in south of England and Ireland; scarcely indigenous in Scotland. ♂. 8, 9.

3. *D. pilósus* L. (*small T.*); leaves petiolate with a small leaflet at the base on each side, involucre shortly deflexed. *E. B. t.* 877.

Moist hedges, but not common. In several places in the middle and south of England; not wild in Ireland or Scotland. ♂. 8, 9.—*Stem* slender, 2—4 ft. high, angular, rough with short reflexed prickles, which are longer and resembling bristles on the peduncles. *Leaves* ovate, acuminate, serrate. Heads of flowers rather small, round, hairy. Scales of the receptacle obovate-cuspidate, straight. Corolla white. Anthers white, much protruded.

2. SCABIÓSA Linn. Scabious.

Receptacle scaly. *Involucre* membranaceous or minute. *Cal.* limb of 4 or 5 bristles. *Stam.* distinct, nearly equal. *Fruit* with 8 depressions.—Named from *scabies*, the *leprosy*; an infusion or decoction of some of the species having formerly been employed in curing cutaneous diseases.

1. *S. succisa* L. (*Devil's-bit S.*); segments of corolla 4 nearly equal, fruit angled with the depressions reaching nearly to the base and a very short crown, calyx-bristles conniving, cauline leaves dentate, heads of flowers nearly globose, leaves of the involucre in 2—3 rows. *E. B. t.* 878.

Meadows and pastures, common. 4. 7—10. — *Root* as it were cut off abruptly or bitten (*radix præmorsa*). *Stems* nearly simple. *Leaves* hairy, rather stiff; radical ones ovate, mostly petiolate, those of the stem oblong. *Flowers* purplish-blue, or white.

2. *S. Columbária* L. (*small S.*); corollas usually 5-cleft radiating, fruit subcylindrical with the depressions reaching to the base, limb of the involucre membranaceous entire patent about 20-nerved half the length of the fruit, stem hairy, radical leaves ovate crenate or lyrate, those of the stem pinnatifid with linear segments. *E. B.* t. 1311.

Pastures and waste places, most abundant on the east coast. Rare in Scotland; near Arbroath, with white fl.; plentiful near Montrose, and at Blackford; Berwickshire. *Æ.* 7, 8.—Scarcely a foot high, hairy. Lower leaves on rather long foot-stalks; cauline ones cut into narrow, linear, or setaceous pinnæ. Flowers purplish-blue. Involucre of narrow leaves, longer than the flowers.

3. KNAÚTIA Linn. *Knaütia*.

Receptacles hairy, without scales. *Involucre* with a 4-toothed minute limb. *Cal.*-limb cup-shaped with radiating teeth. *Stam.* distinct, nearly equal. *Fruit* upon a short stalk, 4-angled, with 4 pores or depressions.—Named in honour of *Christopher Knaut*, a botanist of Saxony, who flourished in the latter half of the 17th century.

1. *K. arvensis* Coult. (*Field K.*): heads of many flowers, fruit crowned with very minute teeth, calyx with 8—16 somewhat awned teeth. *Scabiosa* L.: *E. B.* t. 659.

Pastures and corn-fields, frequent. *Æ.* 6—8.—*Stem* 2—3 ft. high. Radical leaves lanceolate, slightly serrate, hairy. Heads of flowers large, convex, lilac-purple; outer florets large, with the segments unequal, so that the lower ones form a sort of ray around the head; inner florets with equal segments.

ORD. XLVI. COMPOSITÆ Juss. (Tab. III. A., and Tab. IV. and V.)

Calyx adherent with the ovary, the limb entire or toothed or mostly expanded into a pappus which crowns the fruit. *Corolla* regular or irregular, filiform or tubular or ligulate, very rarely wanting. *Stamens* 5: *anthers* syngenesious in the perfect florets, furnished at the apex with a more or less evident appendage, and at the base with 2 bristles or spurs, or without any (eacaudate). *Ovary* 1. *Style* 1, sheathed in the perfect florets by the tube of the anthers, bifid at the apex when fertile. *Stigmas* forming two longitudinal rows along the inner surface of each branch of the style. *Fruit* an achene tapering to a beak, or without one, with a small or large epigynous disk. *Seed* erect, without albumen. *Embryo* straight. *Radicle* next the hilum.—Stems, in the British genera, herbaceous. Leaves opposite or alternate. Flowers or florets collected into a head

(compound flower, *L.*) inserted upon a broad receptacle (which is either furnished with chaffy scales or naked) and surrounded by an involucre (calyx *L.*).¹ The properties in so extensive an Order are very varied; but, generally speaking, those of—
 Tribe 1. CICHORACEÆ, are bitter and narcotic, abounding in milky juice.—Tribe 2. CYNAROCEPHALÆ, bitter and tonic.—
 Tribe 3. CORYMBIFERÆ, aromatic, stimulant, containing bitter principle and essential oil.

I. Florets all ligulate and perfect. CICHORACEÆ.

* *Pappus of all, or of the central florets, plumose.*

† *Receptacles naked.*

1. TRAGOPOGON. Involucre single of 8—10 connected scales.
2. HELMINTHIA. Involucre with external foliaceous scales. Achenes beaked.
3. PICRIS. Involucre with external small scales. Achenes scarcely beaked.
4. APARGIA. Involucre unequally imbricated. Pappus of all the achenes plumose.
5. THRINIA. Involucre unequally imbricated. Pappus of outer achenes short and scaly.

†† *Receptacles with chaffy scales.*

6. HYPOCHERIS. Involucre unequally imbricated.

** *Pappus pilose, filiform.*

† *Achenes much compressed. Involucre of fruit erect.*

7. LACTUCA. Beak of achenes filiform. Pappus very soft and flaccid. Invol. few-flowered.
8. MUGGEDIUM. Beak very short, constricted between the achene and the disk. Pappus stiff and brittle. Involucre many-flowered.
9. SONCHUS. Beak 0. Pappus very soft and flaccid. Invol. many-flowered.

†† *Achenes nearly terete, or angled at the base.*

10. CREPIS. Pappus nearly white, soft, deciduous. Achenes without a beak, or with a very short one, longitudinally striate.
11. BORKHAUSIA. Pappus white, soft, deciduous. Achenes terete. Beak long. Involucre of fruit oval, erect, ribbed and furrowed.

¹ When all the florets are perfect (containing both anthers with pollen and a fertile pistillum), the heads are said to be *homogamous* (as in *Leontodon*, *Carduus*, and *Diotis*); when some only of the florets are perfect, the heads are *heterogamous* (as in *Centaurea Cyanus*, *Gnaphalium*, and *Bellis*); when all the florets are alike, having either fertile stamens, or a fertile pistillum, but not both, the heads are *diœcious*, and then they may be on the same individual (as in *Xanthium*), or on different ones (as in *Antennaria*), the genus or species being itself *monœcious* or *diœcious*; when some of the florets in a head have fertile stamens, but not a fertile pistillum in the disk, while those of the circumference have a fertile pistillum, the heads are said to be *monœcious*; and when the heads are monœcious, and one individual bears heads with numerous staminate and few pistillate florets, and another numerous pistillate and few staminate florets, the genus is said to be *sub-diœcious* (*Petasites*). When all the florets are similar in colour, they are said to be *homochromous* (as in *Solidago*, and *Inula*); when the ray is of a different colour from the disk, they are *heterochromous* (as in *Bellis*).

12. LEONTODON. Pappus white, soft, deciduous. Achenes sub-compressed. Beak long. Invol. of fruit reflexed.
 13. HIERACIUM. Pappus brown, brittle. Beak 0.

*** *Pappus neither filiform nor plumose. Receptacle naked.*

14. LAPSANA. Pappus none, or a mere rim to the achene.
 15. CICHORIUM. Pappus of all the florets of erect scales.

II. Florets all tubular, homogamous, or those of the ray neuter. Style swollen below its branches. CYNAROCEPHALÆ.

* *Scales of the involucre with a hooked point. Achenes glabrous.*

16. ARCTIUM. Anthers with 2 bristles at the base; appendages filiform.

** *Scales of the involucre not hooked at the point.*

† *Pappus of several rows conspicuously unequal; inner row the longest, much longer than the glabrous achene.*

17. SERRATULA. Pappus pilose, hairs filiform. Anthers ecaudate at the base; appendages obtuse.
 18. SAUSSUREA. Inner pappus plumose, hairs thickened at the base. Anthers with 2 bristles at the base; appendages long, acute.

†† *Pappus equal, long; hairs united at the base into a ring. Achenes glabrous.*

19. CARDUUS. Pappus pilose. Achenes compressed. Receptacle hristly. Anthers without bristles.
 20. CNICUS. Pappus plumose. Achenes compressed. Receptacle bristly. Anthers without bristles.
 21. ONOPORDUM. Pappus pilose. Achenes 4-ribbed. Receptacle honey-combed. Anthers shortly caudate at the base.

††† *Pappus single, long, plumose; hairs unequally united at the base. Achenes silky.*

22. CARLINA. Inner scales of invol. long, coloured and radiating. Anthers hicaudate; appendages long.

†††† *Pappus 0, or short (equal to, or shorter than, the achenes).*

23. CENTAUREA. Ray frequently without stamens or pistils.

III. Florets of the same head all homogamous (and usually tubular); or those of the circumference filiform or tubular and pistillate, or ligulate. Style of the perfect florets not swollen below its branches. CORYMBIFERÆ.

1. *All the florets with corollas. Involucre not prickly.*

* *Pappus of 2—5 persistent awns.*

24. BIDENS. Receptacle with scales. Achenes compressed or angular.

** *Pappus 0, or a mere border, or of short teeth or scales only.*

† *Receptacle with scales. Pappus 0.*

45. ANTHEMIS. Heads heterogamous, with a ray. Florets of the ray oblong-linear. Achenes terete, or obscurely angled.

- 45^a. *ANACYCLUS*. Heads heterogamous, with a ray. Florets of the ray oblong-linear. Achenes compressed, winged at the edges.
 46. *ACHILLEA*. Heads heterogamous, with a distinct ray. Florets of the ray short obovate. Achenes compressed.
 25. *DIOTIS*. Heads homogamous, discoid. Florets and achenes compressed.

†† *Receptacle without scales.*

42. *BELLIS*. Heads heterochromous. Florets of the ray ligulate, conspicuous. Scales of the invol. nearly equal in length. Achenes compressed; epigynous disk minute.
 27. *ARTEMISIA*. Heads discoid, homochromous; ligulate florets, when present, short or filiform. Invol. imbricated. Achenes with a minute epigynous disk.
 26. *TANACETUM*. Heads discoid homochromous and homogamous, or the florets of the circumference with a short ligule. Achenes with a large epigynous disk.
 44. *MATRICARIA*. Heads heterochromous, florets of the ray conspicuously ligulate, of the disk terete. Achenes of the disk and ray similar, angled. Epigynous disk large.
 43. *CHRYSANTHEMUM*. Florets of the ray conspicuously ligulate, of the disk compressed at the base. Achenes of the disk somewhat terete. Epigynous disk large.

*** *Pappus pilose. Heads discoid. Florets all perfect.*

28. *EUPATORIUM*. Style much exserted, with long blunt branches. (Flowers never yellow.)
 29. *LINOSYRIS*. Style slightly longer than the cor. Invol. loosely imbricated, or of one row of equal scales, surrounded by several long ones. Achenes compressed. (Flowers yellow.)
 37. *SENECIO*. Style slightly longer than the cor. Invol. cylindrical or conical, of one row of equal scales with several small ones at the base. Achenes terete.

**** *Pappus pilose. Heads discoid. Florets of the circumference, or all, imperfect.*

30. *ANTENNARIA*. Diœcious. Heads diœcious. Invol. imbricated, dry and scarious.
 31. *GNAPHALIUM*. Heads heterogamous, all similar. Invol. imbricated, dry and scarious. Recept. flat and quite naked.
 32. *FILAGO*. Heads heterogamous. Invol. imbricated, dry and scarious. Recept. conical, with 1—5 rows of scales among the outer florets.
 40. *INULA*. Heads heterogamous. Invol. imbricated, herbaceous. Florets of the ray in a single row, with a narrow ligule. Anthers with bristles at the base.
 35. *ERIGERON*. Heads heterogamous. Invol. imbricated in several rows. Florets of the ray in several rows, with a narrow ligule. Anthers without bristles at the base.
 33. *PETASITES*. Subdiœcious. Heads monœcious. Invol. in a single row, herbaceous, with one external row of scales. Fertile florets filiform, truncated.
 33^a. *HOMOGYNE*. Heads heterogamous, with a single row of filiform pistillate florets in the circumference. Involucre in a single row, with an external row of scales. Style with long papillose branches. Anthers without bristles at the base.

***** *Pappus of the florets of the disk pilose. Heads heterogamous with a conspicuous ligulate ray.*

† *Anthers almost naked at the base.*

‡ *Florets of the ray with a pilose pappus.*

34. TUSSILAGO. Florets of the ray in many rows. Invol. nearly simple. Achenes terete. (Florets homochromous.)
35. ERIGERON. Florets of the ray in several rows. Invol. evidently imbricated. Achenes compressed. (Florets heterochromous.)
36. ASTER. Florets of the ray many in a single row. Invol. imbricated. Achenes compressed. (Florets heterochromous.)
37. SOLIDAGO. Florets of the ray few (about 5) in a single row. Invol. much imbricated. Achenes terete.
38. SENEIO. Florets of the ray in a single row. Invol. subcylindrical, of one row of equal scales, with or without smaller ones at its base. Achenes terete.

‡‡ *Florets of the ray without a pappus.*

39. DORONICUM. Scales of the invol. of 2—3 rows, nearly equal. Achenes terete.

†† *Anthers with 2 bristles at the base. Florets of the ray in a single row.*

40. INULA. Pappus in a single row, pilose.
41. PULICARIA. Pappus in 2 rows; outer row short, cup-like, membranous, toothed; inner pilose.

2. *Fertile florets without cor. Heads diœcious. Fertile invol. prickly.*

47. XANTHIUM. Monœcious. Fertile invol. 2-flowered. Pappus 0.

Tribe I. CICHORACEÆ. Chicory or Lettuce Tribe. (Tab. III. A.)

All the florets with ligulate corollas and perfect (having both stamens and pistils). Style not swollen beneath its branches. Gen. 1—15.¹

* *Pappus of all or of the central florets plumose. (Gen. 1—6.)*

1. TRAGOPÓGON Linn. Goat's-beard.

Achenes longitudinally striate, beaked. *Pappus* feathery. *Recept.* naked. *Invol.* simple, of 8—10 scales united at the base. —Named from *τραγος*, a goat, and *πρωγων*, a beard; from the beautifully bearded fruit.

¹ At Tab. III. A. is a very familiar example of this group in the *Dandelion* (*Leontodon Taraxacum*), where all the flowers or florets (f. 2.) are ligulate or strap-shaped and perfect.

Fig. 1. Head of flowers in bud, the young involucre alone being visible.

Fig. 2. A single flower or floret, removed from the receptacle, showing (at *a*) the ligulate corolla; (*b*) the germen (ovary or young fruit) covered with the tube of the calyx, which is lengthened above, in a curious manner, into a little stalk or beak, and crowned with the pappus or seed-down, which is, in fact, the limb or free portion of the calyx, within which the corolla is inserted; (*c*) the stamens, the filaments of which are inserted into the lower or tubular portion of the corolla, and the five anthers are united into a tube around the style; (*d*) the style continued from the top of the germen, through the corolla and united anthers, di-

1. *T. pratensis* L. (yellow G.); glabrous, involucre about as long or twice as long as the corollas, leaves undivided acuminate with a dilated base channelled, peduncles slightly thickened at the very summit. — *α*. involucre about as long as the corollas. *E. B.* t. 434. — *β*. involucre twice as long as the corollas. *T. minor* *Fries.* *T. major* *Hook. Br. Fl.* ed. 2. (not perhaps of *Jacq.*).

Meadows and pastures, frequent. ♂. 6, 7. — *Stem* 1—2 ft. high. *Leaves* of *β*. more attenuate than in *α*. *Invol.* 8-leaved. *Flowers* yellow, closing every day before noon; head of fruit large. *Achenes* of the florets of the circumference striate and squamosely-scabrous or toothed in this and the next. *Pappus* very feathery, elevated on a long stalk.

2. *T. *porrifolius* L. (purple G., or *Salsify*); involucre longer than the corollas, leaves undivided straight acuminate slightly dilated above the base, peduncles much thickened upwards. *E. B.* t. 638.

Moist meadows, in several parts of England; but very local. About Glasgow. ♂. 5, 6. — *Stem* 3—4 ft. high. *Flowers* large, purple, closing before noon, or in rainy weather. The root was formerly cultivated for culinary purposes.

2. HELMINTHIA Juss. Ox-tongue.

Achenes transversely striate, beaked. *Pappus* feathery. *Recept.* naked. *Invol.* double; inner of 8—10 close scales, outer of 3—5 shorter, lax, leafy ones. — Name: ἑλμινθιον, a small kind of worm; from the form of the fruit.

1. *H. echioides* Gærtn. (bristly O.); outer scales of the involucre 5 cordate crenate, stem erect hispid. *Picris* L.: *E. B.* t. 972.

Borders of fields, especially in a clay soil. In Scotland, near Berwick-upon-Tweed, very rare. About Dublin. ☉. 6—10. — *Stem* 2—3 ft. high, stout, hispid, with numerous rigid hairs, springing from tubercles. Lower leaves lanceolate, upper ones cordate, amplexicaul. *Flowers* small, yellow.

3. PICRIS Linn. Picris.

Achenes transversely striate, with scarcely any beak. *Pappus* with the inner hairs feathery. *Recept.* naked. *Invol.* of many compact, upright, equal scales, with several external small linear ones. — Name: πικρος, bitter, as are many of this tribe.

1. *P. hieracioides* L. (*Hawk-weed* P.); stem rough with

viding into two branches, which bear the minute stigmas. This style is not swollen, as in the Thistle group.

Fig. 3. Extremity of the style.

Fig. 4. a receptacle, with the involucre bent back in age, and all the fruit and seed-vessels having fallen away but one.

Fig. 5. A fruit laid open, showing the erect seed in the cavity or cell.

All but figs. 1. and 2. more or less magnified.

hooked bristles, leaves lanceolate rough toothed, flowers corymbose, peduncles with many bracteas, outer scales of the involucre linear-oblong lax bristly on the keel. *E. B.* t. 196.

Road-sides and borders of fields; frequent in England; not found in Scotland. Portmarnock, Ireland. ♂. 6—10. — *Stems* 2—3 ft. high. *Flowers* yellow. *Pappus* of the marginal and central florets alike.

4. APÁRGIA Schreb. Hawkbit.

Achenes beaked. *Pappus* feathery. *Recept.* naked. *Invol.* unequally imbricated, with hirsute black scales.—Name: *απαργία*, some uncertain weed known to the Greeks which sprung up *απο*, from, *αργία*, the idleness of the cultivator.

* *Pappus* with an outer row of bristles.

1. *A. hispida* Willd. (*rough H.*); scape single-flowered thickened upwards slightly hispid naked or with 1—2 minute scales, leaves runcinate hispid with forked hairs, flowers drooping in bud, involucre hairy. *Hedypnois Huds.*: *E. B.* t. 554. *Leontodon L.*

Meadows, pastures, and gravelly heaths, frequent. ♀. 6—9.

** *Pappus* simple. (*Oporinia Don.*)

2. *A. autumnális* Willd. (*autumnal H.*); scape scaly upwards, leaves lanceolate toothed or pinnatifid nearly glabrous, peduncles swollen beneath the involucre.—*α.* leaves nearly glabrous, scape branched, involucre somewhat downy. *Hedypnois E. B.* t. 830. *Oporinia Don.*—*β.* leaves glabrous, scape almost simple, involucre clothed with blackish hairs. *Hedypnois Taraxaci E. B.* t. 1109. —*γ.* leaves hairy, scapes branched, involucre with dark hairs.

Meadows and pastures, frequent.—*β.* on mountains.—*γ.* in Highland glens. ♀. 8. — *Involucre* cylindrical, and tapering gradually into the *pedicel*. *Flowers* moderately large, yellow. *Pappus* brownish-white.

5. THRÍNCIA Roth. Thrincia.

Achenes tapering into a beak, the outer ones enveloped by the leaves of the involucre. *Pappus* of the marginal florets forming a short scaly cup, of the rest long, feathery. *Recept.* naked. *Invol.* imbricated.—Name: *θρίγκος*, a *battlement*; from the resemblance of the seed-crown of the marginal florets to the battlements of a wall.

1. *T. hirta* Roth (*hairy T.*); leaves lanceolate sub-sinuato-dentate somewhat hispid with frequently forked hairs, scapes single-flowered ascending glabrous below. *Hedypnois E. B.* t. 555.

Gravelly pastures and moors. 4. 7, 8.—In small starved specimens, the *leaves* are frequently runcinate. Scales of the *involucre* glabrous, or more or less hairy. The outer *pericarps*, which have scales for a *pappus*, are often abortive and smooth; the inner ones are beautifully striate and marked with raised dots.

6. HYPOCHŒ'RIS Linn. Cat's-ear.

Achenes striate, often beaked. *Pappus* feathery. *Receptacle* chaffy. *Involucre* oblong, imbricated.—Name from ὑπο, *for*, and χοῖρος, a *hog*; the roots being eaten by that animal.

* *Pappus* with an outer row of scabrous hairs.

1. *H. glabra* L. (*smooth C.*); nearly glabrous, *involucre* oblong regularly imbricated equalling the *florets*, *achenes* of the central *florets* beaked, stem branched somewhat leafy, radical leaves dentato-sinuate.—α. *achenes* of the circumference without a beak. *E. B. t.* 575.—β. *achenes* of the circumference beaked. *H. Balbisii* Loisel.

Fields and gravelly soils in many places, but not very common.—β. In Kent and Shropshire. ☉. 6—8.—*Stem* 1 ft. or more high. *Leaves* oblong, with a few scattered hairs. *Flowers* small, yellow. The var. β. may be a distinct species; but we have not seen British specimens, and our foreign ones are not sufficiently numerous to enable us to decide.

2. *H. radicata* L. (*long-rooted C.*); stem branched leafless glabrous, peduncles with small scales, *involucres* shorter than the *florets*, scales acuminate, leaves runcinate obtuse scabrous. *E. B. t.* 831.

Meadows, pastures and way-sides, frequent. 4. 7.—*Leaves* all radical, spreading on the ground. *Stem* 1 ft. or more high. *Peduncles* a little thickened upwards. *Flowers* rather large, yellow. *Achenes* of all the *florets* beaked.

** *Pappus* in a single row.

3. *H. maculata* L. (*spotted C.*); stem almost leafless solitary nearly glabrous, leaves obovate-oblong undivided toothed (spotted above), *involucres* slightly hispid. *E. B. t.* 225. *Achyrophorus Scop.*

In open chalky and limestone pastures, rare. Suffolk; Cambridgeshire. Ormeshead, N. Wales. 4. 7, 8.—*Leaves* almost all radical, scabrous. *Stem* or *scape* with one, or rarely 3—5, large deep yellow *flowers* and 2 or 3 small lanceolate scales or *bracteas*.

** *Pappus* pilose filiform. (Gen. 7—13.)

7. LACTÚCA Linn. Lettuce.

Achenes much compressed, with a long beak. *Pappus* pilose. *Receptacle* naked. *Involucre* imbricated, cylindrical, few-flow-

ered, its scales with a membranous margin.—Named from *lac*, *milk*; which flows from this and many plants of the tribe, when broken.

* *Beak of achenes elongated (white). Keel of leaves prickly.*

1. *L. virósa* L. (*strong-scented L.*); leaves patent oblong toothed or sinuate two-eared and amplexicaul at the base, flowers paniced, beak as long as the (black) achene. *E. B. t. 1957.*

Banks and way-sides, especially in a chalky soil. Rare in Scotland; about Edinburgh, Dunkeld, Coldstream, Melrose, and Stirling Castle. ♂. 7, 8.—*Stems* 3—4 feet high, erect, prickly, with distant *leaves*. *Root-leaves* obovate, numerous.—The plant abounds with a milky fetid and narcotic juice, which is considered by some practitioners as a gentle and safe opiate. *Flowers* small, yellow.

2. *L. Scarióla* L. (*prickly L.*); leaves nearly upright lanceolate sagittate at the base sinuate ciliato-dentate, panicle leafy, beak as long as the (pale) achene. *E. B. t. 268.*

Waste ground, rare. Cambridgeshire; Suffolk; Sussex and the southern counties. ♂. 7, 8.—Of milder quality and paler colour than the last, with more upright *branches* and *leaves* and pale *achenes*. The *garden lettuce* is *L. sativa* L., not a native.

3. *L. saligna* L. (*least L.*); root-leaves lanceolate with few teeth, lower cauline ones pinnatifid, upper ones linear-lanceolate entire sagittate, flowers lateral with small floral leaves, beak 2 or 3 times as long as the fruit. *E. B. t. 707.*

Chalky waste ground and salt-marshes, in the south-east of England. ♂. 7, 8.—Whole *plant* slender; *branches* twiggy; the small *flowers* may be said to be almost spicate.

** *Beak short. Keel of leaves smooth.*

4. *L. murális* Less. (*Ivy-leaved L.*); florets 5, leaves lyrato-pinnatifid and toothed the terminal lobe angled, panicle with divaricated branches, beak much shorter than the (black) achene. *Prenanthes L.*: *E. B. t. 457.*

On old walls and in woods. ☉ or ♂. 6—8.—*Stem* 2 ft. high, paniced above. *Flowers* small, yellow.

8. MULGÉDIUM Cass. Blue Sow-thistle.

Achenes much compressed, constricted above the seed and terminated by a slightly dilated disk. *Pappus* brittle. *Recept.* naked. *Invol.* many-flowered, double: inner of one row of equal scales; outer of imbricated short lax ones.—Named from *mulgeo*, to *milk*; on account of the milky juice.

1. *M. alpinum* Less. (*alpine B.*); flower-stalks racemose and bracteas and involucre glandular-hispid, stems glabrous below,

leaves glabrous lyrate sagittate at the base, terminal lobe very large deltoideo-hastate. *Sónchus cæruleus* *E. B. t.* 2425.

Rocky places, near rivulets. Loch-na-gar and Clova mountains, and in their vicinity. *¶.* 7, 8.—Flowers blue.

9. *SÓNCHUS* *Linn.* Sow-thistle.

Achenes much compressed, without a beak. *Pappus* pilose. *Recept.* naked. *Invol.* imbricated, with 2—3 rows of unequal at length connivent scales, tumid at the base, few-flowered.—Named *σολυχος* in Greek; perhaps from *σοπφος*, *hollow*, in allusion to the hollow stems.

* *Root perennial.*

1. *S. palústris* *L. (tall Marsh S.)*; heads corymbose, peduncles and involucre glandular-hispid, leaves clasping the stem with long acute sagittate auricles, lower ones runcinato-pinnatifid with few segments, upper ones entire, stem simple, rhizome branched but scarcely creeping. *E. B. t.* 935.

Marshy places, rare. Isle of Ely; Greenwich; Blackwall; Croydon; Wouldham, Kent. *¶.* 7, 8.—*Stem* 6—8 feet high. *Flowers* large yellow.

2. *S. arvénis* *L. (Corn S.)*; heads corymbose, peduncles and involucre glandular-hispid, leaves denticulate clasping the stem with short obtuse auricles, lower ones sinuato-runcinate, upper ones oblong-lanceolate entire, stem simple, rhizome extensively creeping. *E. B. t.* 674.

Corn-fields, frequent. *¶.* 8, 9.—*Stems* 3—4 ft. high. *Flowers* very large yellow.

** *Root annual.*

3. *S. oleráceus* *L. (common annual S.)*; head subumbellate, involucre glabrous, leaves undivided or pinnatifid toothed, lower ones stalked, upper ones lanceolate clasping the stem with spreading sagittate auricles, fruit longitudinally ribbed and transversely rugose.—*α.* leaves divided. *E. B. t.* 843.—*β.* leaves entire.

Waste places and cultivated ground, common. ☉. 6—8.—*Stem* 2—3 ft. high. *Flowers* small yellow. *Involucre* conical when in seed.

4. *S. áser* *Hoffm. (sharp-fringed annual S.)*; heads subumbellate, involucre glabrous, leaves undivided or pinnatifid sharply toothed all lanceolate clasping the stem with rounded auricles, stem branched, fruit longitudinally ribbed without transverse wrinkles.—*α.* leaves undivided. *E. B. S. t.* 2765.—*β.* leaves divided. *E. B. S. t.* 2766.

Waste places and cultivated ground, common. ☉. 6—8.—Perhaps a mere variety of the last.

10. CRÉPIS Linn. Hawk's-beard.

Achenes terete or angled, narrower upwards or obscurely beaked, striate. *Pappus* pilose, copious, soft, mostly white, deciduous. *Recept.* naked. *Invol.* scaly at the base.—Name: given by Pliny to some plant, from κρηπίς, a *sandal*; which the leaves were supposed to resemble.

1. *C. virens* L. (*smooth H.*); leaves glabrous runcinate or pinnatifid, the upper ones linear sagittate amplexicaul, the margins plain remotely toothed, stem glabrous, panicle sub-corymbose, outer involucrel scales adpressed linear, inner ones glabrous within, fruit oblong slightly narrower upwards with smooth ribs shorter than the pappus. *C. tectorum* Sm.: *E. B. t.* 1111.

Dry pastures, roofs of cottages, &c. ☉. 6—9.—*Stems* 1—3 ft. high. *Radical leaves* more or less pinnatifid or runcinate, their teeth or segments often horizontal, sometimes curved upwards. *Flowers* small, yellow. *Pappus* about as long as the *involucre*, which is at length ovate and ribbed.

2. *C. biennis* L. (*rough H.*); leaves rough runcinato-pinnatifid, uppermost lanceolate amplexicaul dentato-pinnatifid, panicle subcorymbose, involucre downy, outer scales oblong-linear lax, inner ones downy within, fruit oblong with smooth ribs narrower upwards longer than the pappus. *E. B. S. t.* 2929. fig. *b.*

Chalky pastures in England, rare. Littlebury, near Saffron-Walden, Essex: not uncommon in South Kent; Twycross, Leicestershire; and Cambridgeshire. ♂. 6, 7.—*Stems* 2—4 ft. high, furrowed, rough above. *Flowers* much larger than in the preceding. *Involucre* about as long as the *pappus*, outer *scales* almost glabrous. *Pappus* very white, and upon a *fruit* so attenuated upwards as to form a stalk.

3. *C. *púlchra* L. (*small-flowered H.*); leaves downy toothed, radical ones oblong-ovate, the rest sagittato-amplexicaul, panicle corymbose spreading, achenes very obscurely striate about as long as the pappus, involucre glabrous, outer scales ovate minute adpressed. *E. B. t.* 2325.

"Among the débris of the rocks on the hills of Turin and Pitsandy," near Forfar, Scotland; "but very rare."—*G. Don.* (Not found there by any other person.) ☉. 6—9.—*Root leaves* tapering into a foot-stalk; *cauline* ones broad, clasping the stem with their toothed bases. The very few specimens from Don, which we have seen, are more luxuriant than Smith's acknowledged cultivated one, from which the figure in *E. Bot.* was made.

4. *C. succisafólia* Tausch (*Succory-leaved H.*); leaves oblong-obtuse nearly quite entire the lower ones attenuated into a petiole, upper ones sessile and somewhat amplexicaul, stem tall paniced upwards, peduncle and involucre glandular-hairy, the

scales lanceolate attenuated outer ones very short adpressed, achenes much striate compressed slightly narrower upwards as long as the pappus, pappus rather shorter than the involucre. *Hieracium molle* Jacq.: *E. B.* t. 2210.

Woods; north of England and Scotland. Near Forfar, Falls of the Tummel, Glen Luss, also in Langton woods, and near Renton, Berwickshire. 4. 7, 8. — This plant varies much in the hairiness of its leaves.

5. *C. paludósa* Mænoch (*Marsh H.*); glabrous, radical leaves ovate-oblong runcinato-dentate attenuated into a foot-stalk, cauline ones lanceolate much acuminate heart-shaped and amplexicaul at the base, stem erect branched upwards and subcorymbose, involucre glandular-hairy, achenes striate scarcely narrower upwards about as long as the pappus. *Hieracium L.*: *E. B.* t. 1094.

Frequent in moist woods and rocky places. 4. 7—9. — *Stem-leaves* usually toothed, sometimes entire. *Pappus* in a single row, and more rigid and brittle than in any others of the genus.

11. BORKHAÚSIA Mænoch. Borkhausia.

Achenes terete, transversely wrinkled, with a long subulate beak. *Pappus* pilosc. *Recept.* naked. *Invol.* oval, with deciduous subulate scales, at length ribbed and furrowed. — Named in honour of *Moritz Borkhausen*, a German botanist

1. *B. fœtida* DC (*stinking B.*); leaves hairy, lower cauline ones sessile runcinato-pinnatifid, unexpanded heads drooping, involucre hairy and downy its outer scales lanceolate acute, achenes of the margin slightly beaked and scarcely so long as the involucre, the central ones long-beaked with the pappus entirely protruded. *Crepis L.*: *E. B.* t. 406.

Dry chalky ground, rare. Suffolk, Cambridge, Norfolk, and Kent. ♂. 6, 7. — *Stem* spreading, its upper *leaves* lanceolate, cut at the base. *Heads* solitary, on long simple stalks. *Corollas* red externally. The herb is very milky, and said to diffuse a smell resembling bitter almonds.

2. *B. taraxacifolia* DC. (*small rough B.*); leaves scabrous lower cauline ones runcinato-pinnatifid sessile, heads erect, involucre bristly and downy longer than the uniformly beaked achenes, outer scales ovato-lanceolate membranaceous-margined, bracteas herbaceous linear. *Thuill.* *Crepis E. B. S.* t. 2929. *C. biennis E. B.* t. 149.

Chalky pastures in England; Kent, Suffolk, Essex, Surrey. Caernarvonshire, N. Wales. ♂. 6, 7. — *Leaves* mostly radical, stalked, lyrato-runcinate or pinnatifid, with the terminal lobes large: upper cauline ones linear-lanceolate with linear lobes near the base. *Heads* in an irregular corymb. *Achenes* with rough ribs, and all of them with a beak nearly their own length.

[*B. setosa* DC. (*Crepis E. B. S.* t. 2945), which has the achenes

uniformly heaked, and the outer scales of the involucre small linear-spreading and scarcely membranaceous-margined, has been occasionally found in fields, but is not indigenous.]

12. *LEÓNTODON* Linn. Dandelion. (Tab. III. A.)

Achenes terete, or slightly angled at the base, compressed upwards, with a very long slender beak. *Pappus* pilose. *Recept.* naked. *Invol.* many-flowered, imbricated with scales, of which the outermost are frequently lax and flaccid, reflexed in fruit. —Named from *λεων*, a *lion*, and *οδον*, a *tooth*; from the tooth-like margins of the leaves.

1. *L. Taraxacum* L. (*common D.*); leaves runcinate toothed. —*a.* outer scales of the flowering involucre reflexed. *E. B.* t. 510. *Taraxacum officinale* Wigg. *T. Dens Leonis* Desf. —*β.* scales of the flowering involucre erect adpressed. *L. palustre* Sm.: *E. B.* t. 553. *Tar. palustre* DC.

Meadows and pastures, common. —*β.* Wet open pastures and moors. 4. 3—10.—We only notice the two extreme vars., but there are several intermediate forms. The lowermost *leaves* are sometimes obovate, and not runcinate. *Fruit* linear-obovate, obtuse, muricated towards or at the apex, longitudinally striate, usually pale, but sometimes reddish-yellow or even bright red.

13. *HIERÁCIUM* Linn. Hawk-weed.

Achenes angular, furrowed, with an entire or toothed margin at the top without a beak. *Pappus* pilose, in one row, frequently brownish, persistent and brittle. *Receptacle* nearly naked, dotted. *Invol.* imbricated.—Name: *ἵερακιον*, name of a plant; so called from *ἵεραξ*, a *hawk*; because birds of prey were imagined to use the juice of this plant to strengthen their powers of vision.

[In the *Symb. ad Hist. Hier.* (Nov. Act. Reg. Soc. Scient. Ups. vol. xiii. xiv.) of Fries, he notices, by referring either to plates or to specimens, 32 species natives of Britain; after rejecting 9 of these as probably mentioned by mistake or as doubtfully indigenous, Mr. Backhouse, in his “*Monograph of the British Hieracia*,” increases the number to 33. No one in this country has studied this genus more than Mr. Backhouse, both wild and in a state of cultivation; and if every form tolerably permanent after a few years’ observations is to be deemed a distinct species, we fear that number falls far short of what it will yet be found to be. What renders the subject more confused is, that, although the British species described by Mr. Backhouse have analogues in the north and also in the mountains of the middle of Europe, these often not only differ from each other but also from the definition by which those of our own country have been too strictly limited, leading to the unsatisfactory conclusion that each mountainous district may have a series of species peculiar to itself. If, again, we begin to combine the forms, the chain is so continuous, that we scarcely know where to stop, whole sections of Fries and of Backhouse

becoming thus single, but variable species. Mr. Bentham has therefore (perhaps not injudiciously) reduced all those of this country to seven. In the 7th edition of the British Flora, we had the assistance of Mr. Backhouse, before he had matured his views; it is therefore only justice to him that we here insert the same species, with their arrangement, as proposed by him in his monograph. Occasionally we may combine some of his species, when there is scarcely any difference between his characters; and we shall omit from the text (although inserting them with some modifications in notes) his sectional subdivisions, on account of their passing gradually into each other, and being so vague that persons unacquainted with the name of a species may often look for it in a wrong group. The only object of a 'Species Plantarum,' or in giving names to species, is to enable any one who has a specimen before him to ascertain correctly what it is, whether alive or in the herbarium, in the field or in gardens, stunted or drawn out; but in this genus some of the marks of distinction (as the colour of the styles) refer "exclusively to the living plant;" others, (as those taken from the involucre) are chiefly to be seen "when the florets are in perfection;" the hairs at the tips of the ligules are chiefly fit for examination in "the unexpanded florets;" while the colour of the hairs on the involucre, on which too much reliance is placed, changes from white to tawny in a dried state. It is much to be regretted that Mr. Backhouse has not added an artificial key, or analytical table of the species adapted to all states of the plant, so that one might readily seize on, and retain in the memory, the precise distinctions intended: from want of this there are several of his species which we ourselves have not been able to determine, although we probably possess them.

In conformity with Mr. Backhouse's views the stem is termed *one-headed*, when it shows no tendency to produce more: but it is said to be *one- or few-headed*, when, in addition to a single developed head, there are either a few other heads, or axillary buds ready to form them if the plant be sufficiently luxuriant. The term *floccose* is conveniently used (although not correctly so) when stellate down is present, either copiously or scattered. As in the genera *Rosa* and *Rubus*, the rigid hairs bearing a terminal gland, are called *setæ*; but these hairs pass gradually into black hairs tipped with a white hair instead of a gland, and these again into ordinary hairs, either with or without a bulbous black base. Characters obtained from any of these cannot, we fear, be much relied on.]

A. Plants producing scions. Ligules glabrous. Achenes minute, striate; hairs of the pappus equal, very slender. *Piloselloidea*. (Sp. 1—2.)

1. *H. Pilosella* L. (*common Mouse-ear H.*); leaves entire elliptic-lanceolate or lanceolate hairy with dense stellate down beneath, primary stem 1-headed leafless, involucre ovate at the base, inner scales acute and narrower than the outer ones, styles yellow. *E. B. t.* 1093.

Banks and dry pastures, frequent. 2. 5—8.—*Florets* of a pale lemon-yellow, those of the ray with red stripes on the back. The leafy scions (*stolones*) sometimes produce a flowering terminal stem in

the plants of this section; and we must carefully distinguish such from the primary or true stem.

[We omit here *H. dubium* Huds. not Linn. as it is now quite uncertain what plant was intended; the description given by Woodward in With. Bot. Arr., and the fig. in *E. B. t.* 2332, both of garden specimens, belonging to *H. stoloniferum* W. et K., while Smith's description in the Engl. Fl. is taken from *H. Auricula* L. We also omit *H. Auricula* L. said to have been found in Westmoreland, the description and figure, *E. B. t.* 2368, given by Smith, being taken from a Swiss specimen of *H. glaciale* Lach.]

2. *H. *aurantiacum* L. (*Orange H.*); leaves entire obovato-lanceolate green with longish hairs and no stellate down on both sides, scape leafy near the base hairy bearing a corymb of many flowers, involucre blackish and hispid with black hairs, inner scales broadest obtuse, styles brown. *E. B. t.* 1469.

Hilly woods in various parts of England and Scotland, but an outcast from cottage gardens, where it is common. 4. 6, 7.—Hairs long upon the upper part of the *scape*; black at the base, as they are upon the involucre, mixed with black setæ; hence often called *Grim-the-Collier*. *Flowers* deep orange.

B. Plants producing (in autumn) a tuft of spreading leaves around the root, which usually remain till the flowers are developed next year. Involucre interruptedly or irregularly imbricate, achenes short, truncate, striate; hairs of the pappus unequal. *Pulmonarea*. (Sp. 3—24.)

3.¹ *H. alpinum* L. (*Alpine H.*); green, stem one-headed and one- or more-leaved hairy or silky floccose, leaves hairy beneath usually with glands, radical and lower cauline ones (if large) stalked upper or small ones sessile, heads in bud drooping, involucre subcampanulate much but loosely imbricate clothed with long white grey or fulvous black-based silky hairs, outer scales subfoliaceous lax, inner ones acuminate, ligules hairy externally pilose at the apex, styles yellow. *E. B. t.* 1110.—*α*. radical leaves subglabrous above, stem hairy, involucre hemispherical its scales all lax. *H. alpinum* Backh. *H. melanocephalum* Tausch.—*β*. radical leaves hairy on both sides, cauline ones bract-like, stem silky, involucre turbinate, its scales adpressed. *H. holosericeum* Backh.

¹ We subjoin Mr. Backhouse's first subdivision of this group, comprehending our 3rd and 4th species, with abridged differential characters of his species.

α. Involucre shaggy or silky, outer scales lax, inner ones acuminate or acute. Ligules hairy externally more less pilose at the apex. Stem with one or few leaves or leaf-like bracts, floccose. *Alpina*.

* *Stem* 1-headed, *styles* yellow.

3. *H. alpinum* Backh.; leaves subglabrous above, stem hairy.

3^b. *H. holosericeum* Backh.; leaves hairy on both sides, stem silky.

** *Stem* 1- or few-headed, *styles* usually livid.

4. *H. eximium* Backh.; radical leaves acute.

4^b. *H. calenduliflorum* Backh.; radical leaves obtuse.

Elevated rocky mountains in Scotland.— β . also in Cumberland. 4. 7, 8.—*Stem* from 4 inches to more than a foot high, simple in our wild specimens, and according to Mr. Backhouse never branching in cultivation, sometimes naked sometimes with a single leaf, and occasionally with several leaves. *Radical leaves* varying from lanceolate to ovato-lanceolate, ovato-spathulate, lanceolate-spathulate, and linear-lanceolate; in α . acute or obtuse, entire denticulate or with large teeth; in β . obtuse and entire.

4. *H. eximium* Backh. (*gray-headed H.*); green, stem one- or few-headed and one- or few-leaved floccose hairy, leaves hairy, radical ones lanceolate or ovato-spathulate stalked usually sharply toothed hairy on both sides, upper ones small sessile, heads in bud slightly drooping, involucre rounded or truncate at the base loosely imbricate, its scales linear attenuate acute and as well as the peduncles clothed with grey black-based hairs and many black setæ, ligules hairy externally pilose at the apex. *H. melanocephalum* Backh. in *Brit. Fl.* ed. 7 (not of Tausch).— α . radical leaves more or less lanceolate acute, styles livid or yellow. *H. villosum* E. B. t. 2379 (not Linn.). *H. eximium* Backh.— β . radical leaves ovate or ovato-spathulate obtuse, styles livid. *H. calenduliflorum* Backh.

Elevated rocky mountains in Scotland. 4. 7, 8.—*Stem* usually simple, but often becoming branched when cultivated. *Leaves* sometimes almost laciniate. The *involucre* has narrower scales than in the last, and is usually clothed with more copious black setæ. This species has so many characters in common with *H. alpinum*, and so few points of absolute difference, and these of no organic importance, that botanists will not err much in uniting them: indeed, of Mr. Backhouse's *H. eximium* (our var. α .) there is a form with yellow styles, which is in that respect intermediate between the two, but which on that account will ere long be admitted by many to rank as a species. We regret that Mr. Backhouse has changed the specific name; as Tausch's plant proves to be *H. alpinum*, the name of *melanocephalum* was unoccupied.

5.¹ *H. gracilentum* Backh. (*slender H.*); "green, stem with 2-4 leaves one- or few-headed with short hairs floccose setose, radical leaves lanceolate or oblong spathulate subobtuse remotely

¹ Our species from *H. gracilentum* to *H. Iricum* are contained in Mr. Backhouse's section *Nigrescentia*, of which we subjoin the characters, the chief distinction between it and the preceding one consisting in the ligules being here much more glabrous externally.

b. Involucre villous or hairy, in most of the species with dark hairs and setæ, the scales adpressed or (usually only a few of the outermost) lax. Ligules subglabrous externally, shortly pilose or subglabrous at the apex. *Nigrescentia*.

* "Stem short, 1- or few-headed;" Bab. Petioles of radical leaves short, not shaggy.

5. *H. gracilentum* Backh.; involucre dark and velvety copiously setose, outer scales lax, inner ones broad acuminate, styles sublivid.

6. *H. globosum* Backh.; involucre dark-green with small yellow glands and almost no setæ, scales adpressed linear attenuate, styles yellow.

dentate hairy or nearly glabrous narrowed into the petiole, cauline ones large, involucre ventricose rounded or slightly truncate at the base black with soft velvety hairs and numerous setæ, the scales broad acuminate adpressed floccose at the points outer ones lax, ligules nearly glabrous externally shortly pilose at the apex." *H. alpinum* *Fl. Dan.* t. 27. *H. alpinum var. melanocephalum* *Fries*.

Rocky mountains; rare. Cairn-toul, Ben-na-bour, and Loch-na-gar, Aberdeenshire. Canlochen Glen, Forfarshire. 4. 7, 8. "Styles yellow or rather lurid, frequently clothed more or less densely with very minute dark hairs." The above specific character, with some verbal alterations, is that given by Mr. Backhouse, as we are not quite certain what is meant by this and the next species: it appears to resemble *H. alpinum*, but with the ligules of *H. nigrescens*.

6. *H. globosum* *Backh.* (*globose-headed H.*); "glaucous or green, stem one- or few-headed floccose slightly hairy, radical leaves ovate or ovato-spathulate sub-acute or obtuse entire or dentate glabrous above narrowed into petioles, buds globose, involucre rounded at the base ultimately spherical dark with short black-based hairs, its scales numerous linear attenuate acute adpressed, florets sub-glabrous externally glabrous or rather pilose at the apex, styles yellow."

Cairngorum and Braemar mountains, Aberdeenshire. Cairn-toul; Ben-na-main, above Loch Aan; Ben-na-muicdhu; Little Craigindal. 4. 7, 8.—According to Mr. Backhouse this differs from the last species by the involucres globose before and after flowering, nearly destitute of setæ, and by the linear attenuate acute scales. We fear that both, with many of those which follow, ought to be united.

** *Green.* "Stem frequently elongated and branched, with several heads;" *Bab.* Radical leaves with shaggy petioles; cauline ones not amplexicaul.

† Scales of involucre erect when in bud.

7. *H. nigrescens* *Willd.*; radical leaves with slender petioles coarsely and irregularly dentate, involucre ovate at the base, scales broad outer ones obtuse, styles fuliginose.

8. *H. tingulatum* *Backh.*; radical leaves with short petioles denticulate or dentate, involucre broad at the base, scales attenuate acute, styles livid.

†† Scales of involucre narrow, inflexed when in bud.

9a. *H. senescens* *Backh.*; radical leaves denticulate or remotely and irregularly dentate, involucre broadly ovate or turbinate at the base, scales acuminate.

9b. *H. atrotum* *Fries?*; radical leaves nearly entire or coarsely and almost regularly dentate, involucre urceolate or ovate at the base, scales acuminate.

9. *H. chrysanthum* *Backh.*; radical leaves sharply irregularly and deeply dentate; involucre rounded at the base, scales acute.

*** *Green, viscid with copious glandular hairs. Stem elongated and branched, radical leaves with short winged not shaggy petioles; cauline ones amplexicaul.*

10. *H. amplexicaule* *L.*; scales of involucre lax.

*** *Glaucous green, not viscid. "Stem usually lengthened;" Bab. Radical leaves with shaggy petioles, cauline ones more or less amplexicaul.*

11. *H. cerinthoides* *L.?*; stem with few leaves and few heads near the top, ligules pilose at the apex.

12. *H. Iricum* *Fries*; stem with 3 to 6 leaves corymbose at the top, ligules quite or almost glabrous at the apex.

7. *H. nigréscens* Willd. (*black-headed H.*); green, stem one- or few-headed floccose with few leaves, radical leaves ovate or lanceolate coarsely and irregularly dentate slightly hairy or nearly glabrous above with slender petioles, cauline ones stalked or nearly sessile, buds usually erect, peduncles floccose, involucre ovate or truncate at the base dark green with setæ mixed with white pointed hairs, scales broad floccose at the points, outer ones obtuse, inner acuminate erect in bud, ligules glabrous externally pilose at the apex, styles fuliginous. *H. pulmonarium* *E. B.* t. 2307.

Clova and Aberdeenshire mountains. Ben Nevis. 4. 7, 8.—*Stem* “usually with one leaf, but sometimes with 2 or 3, or with minute bract-like leaves only.” The *styles* are brownish, with dark hairs.

8. *H. lingulátum* Backh. (*lingulate-leaved H.*); “green, stem simple or branched with few heads, radical leaves lanceolate or oblong apiculate denticulate or dentate coarsely hairy above with short petioles, cauline ones few lanceolate or ovate-attenuate acute sessile, involucre broad ultimately truncate at the base very dark with soft black-based hairs, its scales broad alternate acute erect in bud, ligules slightly pilose at the apex, styles livid.” *H. saxifragum* *Bab.* *H. atratum* *var. ramulosum* *Fries.* *H. divaricatum* *Don.*?

Clova and Braemar mountains. Ben Lawers, Perthshire. 4. 7, 8.—*Stem* usually branched. *Leaves* pilose beneath and at the margins. In the 7th edition we had *H. divaricatum* of *Don* principally in view, Mr. Backhouse (to whom we sent our specimen for examination) having pronounced it to be his *H. lingulatum*: on it the cauline leaves are more numerous at the base than in Mr. Backhouse’s description, and they are apparently undulate, with harsh hairs on both sides.

9. *H. chrysánthum* Backh. (*golden-flowered H.*); green, stem nearly simple with one or few heads, radical leaves with slender hairy petioles denticulate or remotely dentate hairy, cauline ones linear-lanceolate or subulate stalked, involucre broadly ovate or rounded at the base with black-based hairs and setæ, its scales linear attenuate inflexed in bud, ligules obscurely pilose at the apex, styles yellow or faintly livid.—*α.* radical leaves sharply irregular and coarsely dentate, involucre rounded at the base usually dark with short black hairs, its scales acute. *H. rupestre* *Bab.* *H. chrysanthum α.* *Backh.* *H. atratum* *var. ramulosum* *Fries*?—*β.* radical leaves almost evenly dentate or entire, involucre urceolate or ovate dark with short black hairs, its scales acuminate. *H. chrys. β.* *Backh.* *H. atratum* *Fries*?—*γ.* radical leaves evenly dentate or denticulate, involucre ovate with black-based hairs, scales acuminate floccose at the apex (when young). *H. senescens* *Backh.*

Mountains at a great elevation.—*α*. Clova, Braemar, and Cairngorm ranges.—*β*. Loch-na-gar, Aberdeenshire; Loch Wharral, Clova. Stridden-edge, and Glara-mara, Cumberland.—*γ*. Canlochen Glen, Clova; Glen Callader, Braemar; Mael Ghyrddy, Breadalbane; Ben Voirlich, Dumbartonshire. *γ*. 7, 8.—With the exception of the trifling marks of distinction assigned above to the three varieties, we do not see how they differ, and probably all, and several others, ought to be combined with *H. atratum* Fries, which is the oldest name. In our *α*. the heads of flowers are usually drooping; in *β*. they are erect or scarcely drooping; in *γ*. they are, we believe, always erect.

10. *H. amplexicaule* L. (*amplexicaule* H.); deep green, all covered with yellowish glandular hairs and viscid, stem woolly at the base 1—3-leaved branched, branches patent, leaves somewhat rigid, radical ones oblong-ovate toothed with short hairy but not shaggy petioles, cauline ones semi-amplexicaul, those of the branches and bracteas cordato-ovate amplexicaul, scales of involucre lax erect in bud, ligules ciliate at the apex, styles yellow. *E. B. S. t.* 2690.

“On a rock called the Garrie Barns, in Clova,”—*G. Don*. *γ*. 7, 8.—The specimen in our herbarium labelled by Don himself, as found on the above rock, is obviously a cultivated one. The station sometimes mentioned, viz. old walls around Cleish Castle, is a still more suspicious one; but as the species has been already admitted into the Flora, and has been figured in the Supplement to ‘English Botany,’ we have still given it a place. It is not, we believe, a very alpine species, and therefore may still be found in the lower ranges of the middle or south of Scotland, which have been little investigated.

11. *H. cerinthoides* L. ? (*Honey-wort* H.); glaucous green, stem with few (usually 2) leaves and few (1—3) heads near the top slightly hairy, radical leaves ovato-lanceolate apiculate or acuminate denticulate about the middle usually hairy beneath with long more or less shaggy petioles, cauline ones more or less amplexicaul constricted below the middle, uppermost sessile, involucre ventricose rounded at the base hairy setose, its scales narrow erect in bud, ligules pilose at the apex, styles livid. *E. B. t.* 2378 ? (cult.)—*α*. cauline leaves constricted few broadly amplexicaul, outer scales of involucre lax. *H. Lawsoni* *E. B. t.* 2083. (not *Vill.*)—*β*. cauline leaf usually solitary narrowed to the base and scarcely amplexicaul, scales of involucre adpressed or outer ones rather lax. *H. anglicum* Fries.—*γ*. extremely glaucous, cauline leaves very acute or acuminate usually glabrous, scales of involucre adpressed, inner ones attenuate acute.

Mountains.—*α*. Scottish mountains, principally of Clova, Aberdeenshire, and Breadalbane.—*β*. Westmoreland; Cumberland; Teesdale. Antrim; Connemara. Highlands of Scotland.—*γ*. Aberdeenshire; Cairn-toul, confluence of the Clunie and Dee near Castleton of Braemar, Aberdeen Links (from seeds brought down by the Dee).

4. 7, 8. — This has the stem usually simple with one to three heads near the top, but there are much more luxuriant forms with the branches again forked. *Leaves* soft, sometimes minutely, sometimes very coarsely toothed, beneath sometimes furnished with stellate down, but often with scarcely any; cauline ones often small, but sometimes as large as the radical ones; when broad they are constricted below the middle, and again dilated at the base. *Scales* of the involucre, especially the inner ones, fine-pointed.

12. *H. Iricum* Fries (*Irish H.*); glaucous green, stem leafy with scattered white hairs simple corymbose or forked at the top, radical leaves ovate or oblong-lanceolate acute denticulate or dentate hairy beneath with shaggy winged short petioles, cauline ones (3—6) broadly ovate (not constricted) fine-pointed all amplexicaul or with the lower ones narrowed to the base, involucre truncate at the base floccose hairy its scales broad (outer ones bluntish) erect in bud, ligules glabrous or nearly so, styles livid. *H. Lapeyrousii* Frægl.: *E. B. S.* t. 2906.

Mountain districts of England, Ireland, and Scotland. Teesdale, Connemara; Garron Head, Antrim. Braemar; Grey Mare's Tail, Dumfriesshire. 4. 7, 8. — *Leaves* firm; cauline ones broadly ovate, decreasing in size upwards. *Ligules* glabrous in our specimens; but, if Fries be correct, they are sometimes pilose at the apex. This may be a distinct species from the last, and Mr. Backhouse says that when cultivated and raised from seed "all its distinctive characters are maintained." It is difficult, however, to see what these are. Usually the stem of this one is leafy and corymbose, but on exposed cliffs it occurs with one or two leaves and a solitary head. The cauline leaves here are never constricted, but they are sometimes not so in *H. cerinthoides*; in this last, however, the upper leaves are the least amplexicaul, in *H. Iricum* most so. In both the involucre becomes constricted at the base after flowering.

13.¹ *H. pallidum* Biv. (*pale H.*); very glaucous, stem glabrous

¹ From *H. pallidum* to *H. sylvaticum* belong to the *Pallida* of Backhouse. We give here his characters, but we do not ourselves see the limits between them and the *Nigrescentia*, or to which those specimens belong that have hairy involucre, adpressed scales, ligules glabrous externally and subglabrous at the apex.

c. Involucre more or less hairy; the scales adpressed. Ligules without hairs externally, nearly or quite glabrous at the apex. *Pallida*.

* *Styles yellow.*

† *Leaves glaucous or pale.*

13. *H. pallidum* Biv.; stem glabrous 0- to 2-leaved, radical leaves glabrous or coarsely ciliate, involucre ovate at the base, its scales acute.

14. *H. lasiophyllum* Backh.; stem brittle pilose 0- or 1-leaved, radical leaves coarsely pilose on both sides or underneath and on the margins, involucre subglobose, its scales acuminate or cuspidate.

15. *H. Gibsoni* Backh.; stem rigid subglabrous leafless, involucre truncate at the base, its scales broad obtuse.

16. *H. argenteum* Fries; stem brittle fistulose glabrous 1- to 3-leaved, invol. broadly ventricose at length truncate at the base, its scales subobtuse.

†† *Dark green.*

17. *H. nitidum* Backh.; stem simple or subcorymbose at the top, peduncles spreading scaly rigid, involucre ventricose with black-based hairs and setæ.

slender with usually one leaf (0—2), radical leaves stalked outer ones obtuse, inner ovato-lanceolate acute remotely denticulate or dentate below glabrous with scattered coarse hairs above usually ciliate with long rigid deciduous hairs, cauline ones lanceolate shortly stalked or sessile, peduncles erect or ascending, involucre ovate at the base constricted above setose with few or no hairs the scales adpressed acute erect in bud, ligules subglabrous, styles yellow.—*α*. radical leaves ciliate, peduncles with scattered setæ. *Dillen. Hort. Elth.* t. 149, f. 179.—*β*. radical leaves not ciliate, peduncles and involucre densely setose. *H. Schmidtii Tausch.*

α. Mountains of England, Wales, Ireland, and Scotland, at from 1000 to 2000 ft. elevation.—*β*. Clova mountains. *γ*. 6, 7, and 9.—“Lower cauline leaves stalked, when there are two; otherwise nearly or quite sessile.”

14. *H. lasiophyllum* Koch (*hairy-leaved H.*); glaucous or ash-coloured, stem leafless or with one leaf and few heads pilose, radical leaves broadly oval or ovato-lanceolate entire or remotely denticulate coarsely pilose on both sides and on the margins or glabrous above floccose, outer ones obtuse innermost acute, petioles shaggy, peduncles densely setose, involucre ventricose slightly hairy densely floccose and setose, the scales acuminate or cuspidate, ligules glabrous, styles yellow. *H. cinerascens Jord.* *H. pallidum var. crinigerum Fries.*

Mountains of Wales, Ireland, and Scotland, at an elevation of 1000 to 2500 feet; rare. Llyn Ogwen, Caernarvonshire; Craig Breiddin, Montgomeryshire. Ben Bulbin, Sligo. Glen Dole and Ravine of the White Water, Clova; Castleton of Braemar, Ben-na-Bourd, and Little Craighindal, Aberdeenshire. *γ*. 7, 8.—If this be distinct from the last, we are unacquainted with it; Fries unites the two. Judging from the character, which we have drawn up from Mr. Backhouse's description, there is no positive distinction; the present species has more hairy leaves, shaggy rather than ciliate

18. *H. aggregatum* Backh.; stem umbellato-corymbose at the top, peduncles erect closely aggregated, involucre narrow at length conical floccose nearly hairless.

*** Styles more or less livid.*

19. *H. murorum* L.; stem corymbose at the top, leaves thin, cauline ones none or few and lower one stalked, peduncles short arcuate, scales of invol. acute, inner ones acuminate erect in bud.
 20. *H. cæsius* Fries? stem corymbose with few heads nearly or quite leafless, leaves coriaceous, peduncles straight, outer scales of invol. bluntish, inner very attenuate inflexed in bud.
 20b. *H. obtusifolium* Backh.; stem corymbose, leaves soft cauline one solitary shortly stalked, peduncles spreading, scales of invol. acuminate inflexed (?) in bud.
 21. *H. stelligerum* Fræd.; stem rather leafy subcorymbose with few heads, leaves floccose, cauline ones large subamplexicaul, scales of invol. acuminate or slightly attenuate inflexed in bud.
 22. *H. vulgatum* Fries; stem leafy usually paniculato-corymbose, leaves narrowed to the base, lower cauline ones stalked, upper sessile, scales of invol. attenuate inflexed in bud.

petioles, and the stem rough with long scattered white hairs, characters of little importance, particularly in a genus where each species varies much in these respects; at the same time Mr. Backhouse does not contrast the two, but rather compares *H. lasiophyllum* with *H. argenteum*.

15. *H. Gibsóni* Backh. (*Cat's-ear H.*); glaucous green, stem rigid nearly glabrous usually simple with 2 heads sometimes forked with 4 heads with narrow bracteas under each of the peduncles, radical leaves usually spotted ovate or oblong obtuse apiculate denticulate somewhat truncate at the base glabrous above pilose at or near the margins, petioles slender more or less villous, involucre truncate at the base floccose with scattered hairs and few setæ, scales broad obtuse inflexed in bud, ligules glabrous, styles yellow. *H. Hypochæridis* Gibs. *H. cæsium* var. *Hypochæridis* Fries.

Debris at the foot of Giggleswick and Gordale Scars near Settle, Yorkshire. 2. 7, 8. — "I cannot regard this plant as any form of *H. cæsium*, nor indeed as being very closely allied to that species; its nearly glabrous ciliate leaves and yellow styles indicate a nearer alliance with *H. pallidum*." Backhouse. We presume that Mr. Backhouse had Mr. Gibson's consent to change the name; but we regret it, not only on the ground of priority, but because it prevents his name being afterwards given to any other species which may be established with more certain characters than those of this present group yet boast of.

16. *H. argenteum* Fries (*Silvery H.*); very glaucous, stem hollow nearly glabrous with 1—3 leaves simple with 1 or 4 heads or branched from the base each branch with 1—3 heads, radical leaves lanceolate acute dentate at the middle or denticulate or entire glabrous above narrowed into hairy rather short petioles, cauline ones subsessile, involucre broadly ventricose constricted above with scattered hairs and a few setæ, outer scales usually obtuse, inner subacute adpressed inflexed in bud, ligules glabrous, styles yellow.

Mountain districts of England, Wales, and Scotland, chiefly in Clova and Bracmar. 2. 7, 8. — *Stem* rather rigid but brittle. *Peduncles* elongated, rigid. *Heads* in bud cylindrical. *Involucre* small, ultimately truncate below.

17. *H. nitidum* Backh. (*scaly-stalked H.*); "dark green, stem with one leaf or leafless and with few heads glabrous, radical leaves lanceolate acute sharply dentate or almost runcinate glabrous above slightly hairy beneath and at the margins narrowed into petioles, peduncles scaly rigid, involucre ventricose with black-based hairs and setæ, its scales acuminate or subobtuse, ligules subpilose at the apex, styles yellow."

Rocky margins of alpine streamlets; rare. Corrie of Ben-na-

bound, and eastern side of Cairn-toul, Aberdeenshire. 2. 7, 8. — *Stem* rigid but not brittle, simple and subcorymbose at the top, with 2—5 heads or branched and with 5 to 10 heads. *Cauline leaf* large if near the base, otherwise small. *Peduncles* setose. *Involucre* rounded at the base, contracted above; its scales with pale margins, outermost short. *Ligules* conspicuously pilose at the apex when in bud, afterwards almost glabrous. This we have not seen. The peduncles “with numerous scales on the upper part,” if this character be constant, would seem to distinguish it from all others of the group; but Mr. Backhouse compares it only with *H. argenteum* and *H. pallidum*, both of which, however, have glaucous leaves.

18. *H. aggregatum* Backh. (*compact H.*); “deep green, stem with one leaf umbellato-corymbose at the extremity glabrous or floccose without hairs, radical leaves broadly ovate obtuse coarsely dentate at the base stalked glabrous on both sides or slightly hairy beneath and at the margins, cauline one subsessile, peduncles erect closely aggregate densely floccose, involucre narrow rather turbinate at the base ultimately conical floccose with very few hairs, its scales obtuse, ligules glabrous, styles yellowish.”

Margins of alpine streamlets; rare. Glen Dee, and eastern slope of Cairn-toul; cliffs above Dhuloch, and on Little Craigindal, Aberdeenshire. 2. 7, 8. — *Stem* rigid, simple with one usually small leaf near the base, or branched with a (sometimes strong) leaf at the axil, densely corymbose with 3 to 17 heads on elongated slender erect almost umbellate peduncles; when branched each branch usually has an umbellate corymb. *Leaves* coriaceous dark or dull green above, paler and slightly glaucous beneath. *Petioles* nearly glabrous. *Involucre* green, cylindrical in bud, with sub-erect scales. *Styles* “yellow or faint orange, sometimes clothed with a few minute darker hairs.” — This we do not know. Mr. Backhouse compares it with *H. casium*, which however he places in a different subdivision, on account of the livid styles.

19. *H. murorum* L. (*Wall H.*); light green, stem with about one leaf (0—3) subcorymbose above, leaves thin radical ones ovate usually rounded or cordate at the base and then with radiating or deflexed irregular coarse teeth destitute of stellate down slightly hairy with long villous petioles, cauline one stalked when large, peduncles short arcuate and the involucre floccose with many setæ and a few whitish black-based hairs, outer scales of involucre acute inner acuminate erect in bud, ligules glabrous or slightly pilose at the apex, styles livid. — *α.* radical leaves ovate or subacuminate apiculate. *E. B.* t. 2082. — *β.* radical leaves broadly ovate rounded at the apex.

In rocky situations, not uncommon. — *β.* Canlochen Glen, Clova mountains. 2. 6—8. — Fries refers Smith's *var. β.* alone to this species, while the variety *α.* and the figure in *E. B.* are considered by

him to belong to *H. cæsius*. Mr. Backhouse, however, again places that figure under *H. murorum*.

20. *H. cæ'sium* Fries? (*lavender-coloured H.*); cæsious or dull green, stem nearly or quite leafless with few heads, leaves coriaceous radical ones ovate or lanceolate rounded or attenuate more or less dentate at the base, stem glabrous above rather hairy beneath and at the margins with villous petioles, peduncles straight floccose, involucre ventricose sparingly setose floccose or with scattered soft black-based hairs, outer scales subobtuse inner alternate acute inflexed in bud, ligules glabrous, styles livid.

Mountain districts, not uncommon; less frequent in the low country. 24. 6—8. — Young heads subglobose. If we felt a difficulty in the last edition how to dispose of this species, which connects *H. murorum* with *H. sylvaticum*, we have more now. We then stated that if the involucreal scales of the opening bud yielded a character of value, this species was scarcely to be distinguished from *H. sylvaticum*. In this the stem has few heads or is subcorymbose, while in *H. sylvaticum* it varies from subcorymbose to paniculato-corymbose; these are comparative, not positive, marks. Mr. Backhouse doubts if this be *H. cæsius* of Fries, on account of Fries attributing to it "one or few leaves" on the stem, whereas in the British form it is either leafless, or with a single leaf below the middle; and as Mr. Backhouse does not inform us whether the scales of the involucre are inflexed in bud, we are now in uncertainty whether his be the same we have in view: we believe, however, it is so. Mr. Backhouse adds the character of a form, of the distinctness of which he appears to have no doubt, since "it assumes under cultivation an appearance conspicuously diverse" from the above. It is "*H. obtusifolium*"; yellowish green, stem erect with one leaf corymbose, original root leaves ovate or broadly elliptical rounded at both extremities nearly or quite entire soft with short hairs, petioles densely villous, peduncles spreading, involucre ventricose ultimately truncate at the base, scales acuminate, ligules shortly pilose at the apex, styles rather livid." It is from the Clova mountains. The position of the scales in the bud is not mentioned.

21. *H. stelligerum* Frœl.? (*stellate-downy H.*); "ashy green, stem rather leafy subcorymbose with few heads floccose throughout, radical leaves soft ovate obtuse or sub-acute denticulate or dentate hoary on both sides with minute stellate down narrowed into long somewhat villous petioles, cauline ones large semi-amplexicaul, peduncles ascending or arcuate floccose, involucre ovate at the base hoary and with scattered whitish hairs, scales acuminate, ligules glabrous, styles livid, (sometimes faintly so)." *H. flocculosum* *Backh. ms.*

Margins of alpine streamlets in Clova and Aberdeenshire; rare. Eastern side of Cairn-toul, and higher part of Glen Dee; Cliffs near Dhuloch, and Loch-na-nean. Near Kirktown of Clova. 24. 7, 8,

—Whole plant covered with minute stellate down. Cauline leaves large, lower one frequently stalked with a winged slightly amplexicaul petiole, upper nearly or quite sessile, or semi-amplexicaul. This we do not know, although we believe it to be only a form of *H. sylvaticum*. Fries says of his species (which may be different) that the scales of the involucre are erect in bud, as in *H. murorum*; Mr. Backhouse leaves us in the dark on that point; while according to Mr. Babington they are inflexed, as in *H. sylvaticum*.

22. *H. sylvaticum* Sm. (*Wood H.*); green purplish or glaucous, stem usually with several leaves simple or branched upwards, paniculato-corymbose (sometimes with few heads and subcorymbose), leaves ovate-oblong or lanceolate dentate about the middle or nearly entire somewhat hairy narrowed to the base radical ones stalked cauline stalked or sessile or sub-amplexicaul, peduncles straight floccose setose, involucre in bud cylindrical at length ovate or truncate at the base its scales broad equally alternate inflexed in bud, ligules glabrous, styles livid. *H. vulgatum* Fries. — *α. vulgatum*; dull or pale green, cauline leaves lanceolate, involucre setose, the scales subacute. (—1. leaves usually uniformly green or purplish or glaucous beneath, radical ones persistent till the period of flowering, peduncles ascending. *E. B. t.* 2031. — 2. leaves spotted with dark purple radical ones withering before the expansion of the flowers, peduncles divaricate. *H. maculatum* Sm.: *E. B. t.* 2121.) — *β. cinereum*; ashy-green or glaucous, involucre with few or no setæ or glands, the scales subobtus. — *γ. rubescens*; green, stem purplish red, leaves ovate, involucre setose, the scales subacuminate.

α. On the plains and mountains, in woods or on walls, banks and rocks; frequent. — *β.* Great Ormeshead, Wales. — *γ.* Giggleswick and Gordale Scars near Settle. 4. 7—9. — A most variable species; and when the specific character is drawn up to embrace all the forms, (for no one can be said to be the type more than another,) and when we reject from it what does not also apply to most of its allies, there is scarcely one infallible mark of distinction left. The evanescent radical leaves connect this with the two next species.

23.¹ *H. Gothicum* Fries (*naked-headed H.*); dark green, stem rigid leafy subcorymbose at the top with few heads or branched, leaves ovato-lanceolate acute toothed principally about the middle nearly glabrous above, radical ones shortly stalked,

¹ This and the next belong to the *Pseudo-accipitrina* of Mr. Backhouse, thus characterised:—

d. "Involucres subglabrous;" the scales obtuse. "Radical leaves frequently forming a winter rosette, but rarely present when the plant is in flower." *Pseudo-accipitrina*.

23. *H. Gothicum* Fr.: lower cauline leaves stalked or subsessile, upper sessile, ligules glabrous.

24. *H. Doerense* Fr.: lower cauline leaves sessile, upper semiamplexicaul, ligules pilose at the apex.

cauline shortly stalked or subsessile upper sessile passing gradually into bracteas, peduncles ascending rigid, involucre dark green with black-based hairs and scarcely any stellate down, scales broad obtuse spirally imbricated, florets glabrous, styles yellow or with minute livid hairs.—*α.* stem with scattered hairs or nearly glabrous, radical leaves usually withering before the heads expand, styles more or less livid.—*β.* stems purplish red rather hairy, radical leaves usually persistent, cauline ones broadly ovato-lanceolate, styles yellow. *H. Norvegicum* Fr. ?

Heathy or grassy places in sub-alpine districts.—*α.* Teesdale; Cader-Idris; Snowdon; Llanberis. Connemara; Carrickfergus. Clova; Braemar.—*β.* Kirk-town of Clova. 4. 7—9.—*Leaves* all similar in form. This species approaches to *H. sylvaticum*, with which it accords in the radical leaves being either persistent or evanescent; it agrees also in the glabrous ligules and sometimes livid styles, but differs in the obtuse scales of the involucre.

24. *H.* Dovrense* Fr. (*Dofrine* H.); “pale green, stem simple leafy divided upwards into few short 1- (or rarely 2-) headed peduncles, leaves oblong or lanceolate toothed, radical ones smaller than the others stalks soon withering, cauline ones sessile, upper with a cordate base and semi-amplexicaul, involucre becoming black hairy, scales broad obtuse, ligules ciliate.”—*Fries*.

Scotland (*Fries*). 4. 7, 8.—We have seen no British specimens; from the radical leaves soon withering, it, as well as the last, might be supposed to belong to the next group; it has an involucre similar to what we find in *H. boreale* and its allies, but the ligules appear to be constantly ciliate. *Leaves* passing gradually into bracteas. *Involucre* subglobose, pretty large, black, with a few short simple hairs or rarely black setæ. *Achenes* as in *H. boreale*, dark-brown, slightly scabrous; *pappus* white. *Styles* fuliginose when dry.

C.¹ Plants producing (in autumn) closed leaf-buds at the base of the stem, which next year become leafy stems without true radical leaves. Scales of involucre in many rows. Achenes of moderate size, truncate at the top; hairs of pappus unequal. *Accipitrina*. (Sp. 25—32.)

25. *H. tridentatum* Fries (*straight-scaled shrubby* H.); stem rigid or flexuose sub-corymbose or paniced at the top, leaves

¹ In this group the leaves are said to be *loosely reticulated* when the nerves given off by the midrib soon branch and disappear among the veins; and *3-nerved*, when these nerves retain their appearance curving upwards towards the margin, and there usually uniting with those below and above them to form a nerve parallel to the margin.

a. *Leaves* green, narrow, with a few teeth at the middle. *Involucre* of fruit constricted at the middle. *Ligules* glabrous.

25. *H. tridentatum* Fr.; heads corymbose, styles livid, leaves 3-nerved.

ovate or lanceolate few-toothed about the middle 3-nerved lower ones obtuse narrowed into petioles upper gradually smaller acute sessile rounded at the base, peduncles slender elongated erect with stellate down, involucre ovate at the base after flowering ventricose and constricted in the middle with scattered blackish hairs or setæ, scales dark-green paler at the margin bluntish or subacute, ligules glabrous, styles livid. *H. rigidum* Koch.

Banks, woods, and thickets, probably not uncommon. (No Scottish or Irish stations are mentioned by Mr. Backhouse.) 4. 8, 9. —“*Stem* occasionally forming small rosettes of leaves at or near the base, similar in appearance to those of the *Pulmonaria*, but not persistent during winter. *Cauline* leaves never clasping.” — *Backhouse*. The remaining species of this group never form persistent rosettes at the base of the stem.

26. *H. prenanthoides* Vill. (*rough-bordered H.*); stem erect hairy, panicle spreading leafy branched corymbose, leaves loosely reticulate and glaucous beneath denticulate or entire more or less hairy ciliate, lower ones oblong tapering into an auricled amplexicaul petiole, upper ovate cordate acute or acuminate sessile, peduncles short floccose and involucre hispid with hairs and black setæ, scales obtuse outer ones few and much smaller than the inner, ligules pilose at the apex. *E. B. t.* 2235. *H. denticulatum* Sm.: *E. B. t.* 2122.

River-sides in the Highlands of Scotland, Northumberland, and Yorkshire; rare. 4. 7, 8. — *Heads* small, numerous; *involucre* cylindrical, the scales placed somewhat in two rows, the outer considerably shorter than the inner, without an intermediate one: in bud the scales are inflexed. *Styles* yellowish or livid with minute dark hairs. *Leaves* gradually passing into bractees, as in all this group.

27. *H. strictum* Fries (*straight-branched H.*); stem rigid

b. *Leaves glaucous beneath. Ligules pilose at the apex.*

26. *H. prenanthoides* Vill.; leaves all amplexicaul loosely reticulated, heads in a corymbose panicle, peduncles short densely setose.
27. *H. strictum* Fries; leaves 3 nerved lower narrowed to the base, heads irregularly corymbose, peduncles elongated with few or no setæ.

c. *Leaves green. Involucre not constricted. Ligules glabrous.*

* *Scales of involucre reflexed at the point. Styles yellow.*

28. *H. umbellatum* L.; leaves loosely reticulated, peduncles not setose.

** *Scales of involucre adpressed.*

27. *H. strictum* Fr.; leaves glaucous beneath 3-nerved, heads irregularly corymbose, peduncles not scaly, styles with dark hairs.
29. *H. crocatum* Fr.; leaves green 3-nerved, heads subcorymbose, peduncles not scaly, styles with fuscous hairs.
30. *H. rigidum* Fr.; leaves paler or slightly glaucous beneath 3-nerved, heads in a branched leafy corymbose panicle, peduncles not scaly, styles with fuscous hairs.
31. *H. corymbosum* Fr.; leaves glaucous beneath loosely reticulated, heads in a branched leafy corymbose panicle, peduncles scaly, styles yellow or with minute dark hairs.
32. *H. boreale* Fr.; leaves green 3-nerved, heads in a corymb or panicle, peduncles scaly, styles livid blackish.

irregularly corymbose at the top, leaves glaucous beneath 3-nerved denticulate scarcely amplexicaul lower ones lanceolate intermediate ovate or oblong-lanceolate upper rounded at the base, peduncles floccose with few setæ, involucre blackish sparingly floccose setose or with brittle whitish hairs or glabrous, scales rather irregularly imbricate adpressed inner ones obtuse, ligules at the apex subpilose in bud afterwards almost or quite glabrous, styles with dark hairs. *H. fruticosum latifolium* glabrum *Ray*.

Sub-alpine districts, perhaps not rare. In Cumberland. Wicklow. Argyleshire; Invernesshire; Forfarshire; Breadalbane; and the Ochill hills. 2. 7, 8.—This is placed by Mr. Backhouse among those with ligules hairy at the apex; but when that character is to be detected at all in this species, it is only while in bud: in that respect it is more allied to *H. rigidum*, from which it differs by the more simple inflorescence.

28. *H. umbellatum* L. (*narrow-leaved H.*); stem corymbose or subumbellate at the top, leaves green loosely reticulated oblong-lanceolate or linear toothed or entire sessile attenuated or rounded at the base, peduncles slender floccose and the involucre glabrous or with few white hairs and no setæ, scales broad obtuse with recurved points, outermost acute, ligules glabrous, styles yellow.— α . leaves flat more or less denticulate, all attenuated or acute at the base. *E. B.* t. 1771.— β . leaves broader and ovate at the base.— γ . leaves elongated very narrow entire revolute at the margin.

Woods, or stony or rocky places. Rare in Scotland.— β . near Dunkerran, Co. Kerry.— γ . Harper's Island, Lough Neagh, Co. Antrim. 2. 7—9.—The most decidedly marked species of the genus. Involucre broadly ovate or subcylindrical, usually dark green and glabrous, but sometimes pale, always with recurved points to the scales. Achenes slightly scabrous, dark brown.

29. *H. crocatum* Fries (*saffron-coloured H.*); stem subcorymbose at the top, leaves green paler beneath 3-nerved linear lanceolate or oblong lower ones attenuated to a broad base upper broadly rounded or amplexicaul at the base, peduncles with few heads, involucre dark green subcylindrical obtuse or truncate at the base glabrous or with black-based hairs, scales adpressed broad obtuse, ligules glabrous. *H. inuloides* *Tausch*.

Mountain districts. Teesdale, Craven, and Cleveland. Glenbally and Carrickfergus, Co. Antrim; Ballinahinch, Connemara. Near Castletown of Braemar. 2. 7, 8.—“*Styles* yellow, or rather livid, and with minute dark hairs. Pappus nearly white.”—*Backhouse*. “*Stem* 1—3 feet high, glabrous or hairy. *Leaves* numerous, varying in shape from ovate to linear-lanceolate, rigid or flaccid, glabrous or hairy. *Heads* of flowers large, but not so numerous as in *H. umbellatum*. Allied to *H. umbellatum* and *H. corymbosum*, rather than to *H. boreale*.”—*Baker in litt.*

30. *H. rigidum* Hartm.? (*rigid-stemmed H.*); stem rigid with a leafy branched corymbose panicle, leaves dull green paler or subglaucous beneath 3-nerved ovate- or oblong-lanceolate few toothed about the middle lowest ones attenuated into winged petioles upper narrowed to a more or less amplexicaul or rounded base sessile, involucre after flowering conical and not constricted in the middle uniformly dark or blackish green with scattered hairs and setæ, scales adpressed obtuse, ligules glabrous.

Mountainous districts. Upper Teesdale. Co. Antrim. Clova. 24. 8, 9.—With this species we are scarcely acquainted. “*Styles* yellow or rather lurid with dark hairs.”—*Backhouse*.

31. *H. corymbosum* Fries (*corymbose H.*); stem rigid with a spreading leafy branched corymbose panicle, leaves loosely reticulated glaucous and floccose beneath rather hairy on both sides ovato-lanceolate irregularly toothed sessile with an amplexicaul or rounded base, peduncles scaly, involucre subglobose in bud afterwards ovate or truncate at the base with scattered hairs and setæ, scales adpressed inner obtuse, ligules glabrous.

Mountain glens; rare. Banks of the Clunie, near the Castletown of Braemar. 24. 7, 8.—If we mistake not, the species as now limited by Mr. Backhouse excludes part of what we, on the authority of Mr. Baker, referred to it in our last edition. Mr. Baker compared it with “*H. crocatum*, but distinguished by its leaves, panicles, and involucre;” adding that it was to be found in Teesdale and Wales, besides Scotland. Mr. Backhouse knows of one locality only, and compares it with *H. rigidum*, and seems only to admit it as a species upon the authority of Fries. So gradually do these supposed species pass into each other, that scarcely two botanists can give the same name to a specimen which departs slightly from what each chooses to consider the typical form.

32. *H. boreale* Fries (*shrubby broad-leaved H.*); stem rough or hairy with a paniced or racemose leafy corymb, leaves dull green paler beneath 3-nerved toothed or denticulate lower ones lanceolate or ovate-lanceolate narrowed into a villous petiole, upper sessile ovate with a broad rounded or cordate base, peduncles copiously floccose scaly erect or ascending, involucre ovate at the base uniformly dark-green or blackish, scales adpressed glabrous or sprinkled with longish brittle hairs innermost very blunt outer often narrower, ligules glabrous at the apex, styles livid or dark. *H. sabaudum* *E. B. t.* 349.

Woods, hedges, and railway embankments, not uncommon. 24. 7—10.—We fear that this is merely one of the many forms of one very variable species; and that as it agrees in most points with several others of the section, the characters ought to be altered to include them. The form or species usually called by the present name is described above, and is best known by the dark involucre, without down, contrasting with the white downy peduncles.

*** *Pappus* neither *filiform* nor *plumose*. (Gen. 14, 15.)

14. *LÁPSANA* Linn. Nipple-wort.

Achenes eompressed, striate. *Pappus* none, or a mere border. *Receptacle* naked. *Involucre* in a single row of erect scales, with small ones at the base.—Named from *λαπαζω*, to purge; from its laxative qualities.

1. *L. communis* L. (common *N.*); involucre of the fruit angular, stem panicle, peduncles slender, leaves ovate or cordate petiolate angulato-dentate, pappus none. *E. B.* t. 844.

Waste and cultivated ground, common. ☉. 7—9.—*Stems* 2—4 ft. high. *Leaves* soft and thin, slightly hairy; the *radical* ones more or less lyrate. *Flowers* small, yellow.

2. *L. pusilla* Willd. (*dwarf N.*); scape branched very thick and fistulose upwards, leaves obovato-oblong toothed, pappus a short entire border. *Hyoseris* L.: *E. B.* t. 95. *Amoseris* Gærtn.

Corn-fields, in gravelly soils, not common. ☉. 6—7.—*Scapes* 6—8 inches high, more or less branched, remarkable for their clavate and fistulose extremities. *Flowers* small, yellow.

15. *CICHÓRIUM* Linn. Succory, or Chicory.

Achenes turbinate, striate. *Pappus* sessile, scaly, shorter than the fruit. *Receptacle* naked or slightly hairy. *Involucre* of 8 scales, surrounded by 5 smaller ones at the base. (*Flowers blue*.)—Name: *chikoûryeh*, in Arabia. The Egyptians eat a vast quantity of this vegetable.

1. *C. Pntybus* L. (*wild S.*); heads sessile axillary in pairs, lower leaves runcinate hispid on the keel, upper ones amplexicaul oblong or lanceolate entire. *E. B.* t. 539.

Borders of fields and waste places; chiefly in a light gravelly or chalky soil. 4. 7—10 —*Stem* 1—3 ft. high, erect, branched. *Flowers* numerous, large, of a bright but pale blue.—The *endive* or *succory* of the gardens is *C. Endivia*, supposed to be a native of India. The specific name of both is derived from the Arabic *hendibeh*.

Tribe II. CYNAROCEPHALÆ. Artichoke or Thistle Tribe.

All the corollas tubular (Tab. IV. A.), 5-lobed, and generally inflated below the mouth, uniform in the same head (perfect or rarely diœcious), or, as in *Centaurea*, with those of the circumference irregular, tubular, and neuter (Tab. IV. B.). Style swollen below its branches. (Gen. 16—23.¹)

¹ This, like the preceding, is a very natural tribe, deriving its name from *Cynara*, the *Artichoke*, which, as well as the *Thistles*, will give a good idea of the general aspect or appearance of all in the group; and it is desirable to study the aspect, for in the following tribe (*Corymbiferae*) there are some genera which have wholly tubular florets, but they are usually quite distinct in appearance from the present, and, upon looking a little carefully into their structure, we shall find that they may be further distinguished from the *Thistle* tribe by the corollas not inflated below

16. A'RTIUM Linn. Burdock.

Achenes 4-sided. *Pappus* short, pilose. *Receptacle* chaffy. *Involucre* globose, the scales with an incurved hook at the point. —Name: *αρκτος*, a bear; from the coarse texture of the involucre.

1. *A. Láppa* L. (common B.); leaves cordate stalked. —*α. majus*; heads large usually corymbose and long-stalked. (—1. heads usually webbed closed in fruit, scales shorter than the florets. *A. Bardana* E. B. t. 2478. *A. tomentosum* Pers. — 2. heads usually glabrous open in fruit, scales longer than the florets. *A. majus* Schk). —*β. minus*; heads racemose. (—1. heads subsessile closed in fruit, scales as long as or longer than the florets. *A. intermedium* Lange. — 2. heads shortly stalked slightly contracted at the mouth in fruit, scales shorter than the florets. *A. Láppa* E. B. t. 1228. *A. minus* Schk. — 3. heads on longish stalks open in fruit, scales as long as the florets. *A. pubens* Bab.)

Waste places and way-sides, common. ♂. 7, 8. — Three feet or more high. Radical *leaves* very large and often slightly toothed. *Involucre* with hooked scales, which fasten themselves most pertinaciously to clothes and the coats of animals. These *scales* are sometimes glabrous, and occasionally have a more or less abundant cottony substance interwoven with them in some of our varieties; the length of the scales and form of the head afford very unsatisfactory characters for species. Mr. Babington in Ann. Nat. Hist., Nov. 1858, p. 351, proposes other marks of difference taken from the petioles of the radical leaves, but which we deem of even less value.

17. SERRÁTULA Linn. Saw-wort.

Achenes obovate, compressed, glabrous. *Pappus* persistent, pilose, hairs filiform in several rows, of which the interior is the

their mouth, and by the style not being swollen below its branches. Examples of the present group will be seen at

Tab. IV. A. Fig. 1. Head of flower of *Carduus*, with the spreading uniform tubular florets within the involucre.

Fig. 2. represents the involucre cut through vertically, to show the receptacle, upon which are a great number of bristles, all the florets being removed from the receptacle but one.

Fig. 3. A floret from the receptacle, showing at the base the ovary or germen, crowned by the pappus or limb of the calyx, within which is the tubular corolla, inflated below the mouth, and including the stamens and swollen style, with its branches and stigmas.

Fig. 4. Summit of the style, showing the swelling (in this instance clothed by a circle of hairs). — All but fig. 1. more or less magnified.

Tab. IV. B. Fig. 1. Head of flowers of the genus *Centaurea*, with the spreading tubular florets, of two kinds, within the involucre.

Fig. 2. Floret from the centre. At its base is the germen or ovary and pappus; within the latter is the corolla, tubular, regular, perfect (having stamens and pistils), inflated below the mouth, and including the stamens and style, the latter swollen just below its branches.

Fig. 3. Floret from the circumference, neuter (having neither stamens nor pistils). At its base is an abortive germen (no pappus), upon which is seated the tubular 5-cleft, but somewhat irregular corolla.

Fig. 4. Fruit of No. 2. with its pappus. — All but fig. 1. more or less magnified.

longest. *Receptacle* chaffy, the scales split into linear bristles. *Involucre* oblong, imbricated with straight unarmed scales. *Filaments* papillose: *anthers* with a short blunt appendage, ecaudate at the base.—Name: *serrula*, a little *saw*; which the margins of the leaves represent.

1. *S. tinctoria* L. (*common S.*); diœcious, leaves entire or pinnatifid, involucreal scales glabrous or slightly connected with a cobweb-like down, outer ones ovate adpressed, inner linear coloured. *E. B. t.* 38.

Thickets and pastures. Not indigenous in Scotland. 4. 8.—*Stem* 2—3 ft. high, branched, stiff. *Leaves* usually pinnatifid or lyrate, and finely serrate, sometimes entire and without serratures, as in Appley Wood, I. of Wight, *Miss Taten*. *Flowers* purple.—It dyes cloth yellow.

18. SAUSSŪREA *De Cand.* Saussurea.

Achenes glabrous. *Pappus* double, sessile; exterior of short rough bristles; inner feathery, deciduous. *Receptacle* bristly or chaffy. *Involucre* imbricated with unarmed scales. *Filaments* smooth: *anthers* with long acute appendages at the apex, and ciliate or woolly setæ at the base.—Named in honour of the two *Saussures*, father and son.

1. *S. alpina* DC. (*alpine S.*); leaves flat cottony beneath lanceolate upper ones quite entire, those of the root ovato-lanceolate toothed stalked, heads few densely corymbose, involucre villous subcylindrical, scales adpressed, the outer ones shorter, anther-bristles ciliate. *Serratula* L.: *E. B. t.* 599.

Moist alpine rocks. Snowdon. The Lake district. Saddleback, Dumfriesshire; frequent on the Highland mountains of Scotland. 4. 8.—*Stem* 8—12 inches high, erect, simple, woolly. *Leaves* few upon the stem. *Flowers* rather large, purple.

19. CÁRDUS *Linn.* Thistle. (Tab. IV. A.)

Achenes glabrous. *Pappus* equal, pilose (not feathery), sessile, united by a ring at the base and deciduous. *Receptacle* bristly. *Involucre* imbricated with spinous pointed scales. *Anthers* ecaudate.—Name: from the Celtic and Gaelic *card*, a *card* for combing wool, for which the involucre of some of the species may have been employed; and this again from *ard*, in Celtic, a *point*; whence also *αρδος*, in Greek, *arduus*, *ardeo*, &c. in Latin.

* *Filaments* distinct, hairy; *anther-appendages* subulate. *Eucarduus*.

1. *C. nutans* L. (*Musk T.*); leaves decurrent sinuate spinous, heads hemispherical solitary drooping, scales of the involucre lanceolate, outer ones spreading. *E. B. t.* 1112.

Waste ground in dry, stony, or chalky soils. ♂. 5—10.—*Stem* 2—3 ft. high, not much branched, cottony, interruptedly winged.

Leaves lanceolate or oblong, deeply sinuate. *Heads of flowers* large, handsome purple. *Involucre* slightly woolly or almost glabrous.

2. *C. acanthoides* L. (*welted T.*); leaves decurrent lanceolate sinuate pinnatifid spinous, heads globose nearly sessile solitary or aggregate, involucre scales linear-subulate erect or spreading. *E. B.* t. 973.— α . heads larger usually solitary, disk of achene with a 5-lobed tubercle.— β . heads aggregate, disk of achene with a conical tubercle. *C. crispus* L.

Way-sides and waste places. ☉ or ♂. 6—8. — *Stem* 3—4 ft. high, interruptedly winged, branched. *Leaves* glabrous or cottony beneath. *Flowers* deep purple, sometimes white.

3. *C. tenuiflorus* Curt. (*slender-flowered T.*); leaves decurrent lanceolate sinuate spinous somewhat cottony beneath, heads nearly cylindrical aggregate sessile, involucre scales ovato-lanceolate attenuate erect. *E. B.* t. 412. *C. pycnocephalus* Jacq.: *Benth.*

Waste sandy places, especially about towns, near the sea. ☉ or ♂. 6—8. — *Stem* 2—4 ft. high, winged to the top with the decurrent bases of the leaves.

* *Filaments monadelphous, papillose: anther-appendages short.*
Silybum.

4. *C. Mariānus* L. (*Milk T.*); leaves sessile amplexicaul waved spinous the radical ones pinnatifid, scales of the involucre subfoliaceous recurved spinous at the margin. *E. B.* t. 976. *Silybum* Gært.

Banks and waste places. Rare in Scotland; about Edinburgh; on Dumbarton rock. ♂. 7. — *Stem* 3—5 feet high. Distinguishable at once by the white veins on its leaves, and the great recurved scales of the involucre. A drop of the Virgin Mary's milk was considered to have produced these veins, as that of Juno was fabled to be the origin of the *milky way*.

20. *CNICUS* Linn.: Willd. Plume-thistle.

Achenes glabrous. *Pappus* equal, plumose, sessile, united by a ring at the base and deciduous. *Receptacle* bristly. *Involucre* tumid, imbricated usually with spinous or mucronate scales. *Anthems* ecaudate; *filaments* distinct.—Named from κνίζω, to prick or wound.

1. *C. lanceolātus* Willd. (*Spear P.*); leaves decurrent hispid pinnatifid their lobes generally bifid spreading spinous, involucre ovate tomentose their scales lanceolate spreading. *Carduus* L.: *E. B.* t. 107.

Way-sides and pastures, frequent. ♂. 7, 8. — *Stem* 3—4 ft. high. *Leaves* white and downy beneath, spinous-hairy above; segments entire, their points long and very sharp. *Heads of flowers* standing singly, large.

2. *C. palūstris* Willd. (*Marsh P.*); leaves decurrent sca-

brous pinnatifid spinous, involucre ovate clustered, their scales ovato-lanceolate mucronate adpressed. *Carduus L. : E. B. t. 974.*

Moist meadows and shady places, frequent. ♂. 7. — Stem 4—6 ft. high, erect, copiously clothed with rather short spines. Remarkable for its clustered heads of flowers, whose involucre have the scales broad, adpressed, keeled and mucronate.

3. *C. arvensis* Hoffm. (*creeping P.*); leaves spinous, heads diœcious by abortion, involucre ovate nearly glabrous, its scales broadly lanceolate adpressed terminating in a short spreading spine, rhizome creeping.—*α.* leaves sessile or very slightly decurrent pinnatifid very wavy. *Carduus Curt. : E. B. t. 975.* —*β.* leaves lanceolate flat entire or slightly lobed. *Cirsium setosum M. Bieb. ?*

Fields and road-sides, too abundant.—*β.* Culross, by the Frith of Forth, Perthshire. Hartlepool. Kirkwall. ♀. 7. As to our *β.* it has been only found in Perthshire by Dr. Dewar, near Hartlepool by Mr. Backhouse, and, according to Mr. Babington, at Kirkwall. It may not be the plant of Bieberstein, an Eastern species, described with scarcely rigid points to the involucral scales: otherwise we must suppose it to have been introduced with ballast.

4. *C. eriophorus* Willd. (*woolly-headed P.*); leaves semi-amplexicaul not decurrent white and cottony beneath spinous-hairy above pinnatifid, lobes bifid alternate segments pointing upwards and downwards, involucre spherical woolly, the scales with a long reflexed spinous point. *E. B. t. 386.*

Waste ground and road-sides, in chalky and limestone soil. Rare in Scotland; near Edinburgh, Dumbarton, and in Appin. ♂. 7, 8.—Stems much branched, furrowed, 2 ft. high; the stoutest of the genus. Leaves acuminate, white and downy beneath; their segments entire, alternately pointing upwards and downwards, and terminated by sharp spines. Involucre very large; its scales linear, mucronate, much interwoven with a woolly substance.

5. *C. heterophyllus* Willd. (*melancholy P.*); leaves semi-amplexicaul (not decurrent) lanceolate soft ciliato-dentate undivided or lacinate glabrous above white and downy beneath, heads mostly solitary, involucre ovate slightly downy, scales ovate or lanceolate acuminate adpressed. *E. B. t. 675.*

Moist mountain-pastures in the North, frequent. ♀. 7, 8.—Rhizome creeping. Stems 2—3 ft. high, striate, and, as well as the under-side of the leaves, covered with a white cottony down. Involucre dark green; its scales acuminate but not spinous.

6. *C. tuberosus* Willd. (*tuberous P.*); leaves sessile (not decurrent) lanceolate deeply pinnatifid lobed fringed with minute prickles pilose above hairy or slightly cottony beneath, lower ones on long stalks, stem without wing or prickles with 1—3 terminal heads, scales of the involucre lanceolate mucronate

adpressed nearly glabrous, root cæspitose of elliptical tapering fleshy knobs. *E. B. t.* 2562.

Great-ridge wood, near Boyton, on the Wiltshire downs. Between St. Donat's and Dunraven, Glamorganshire: *Mr. Westcombe*. Penhill, parish of Stratton St. Margaret's, 2 m. from Swindon: *Mr. Woodward*. 4. 8, 9.—The Glamorganshire plant is said (*Phyt. iv.* 519) to be probably *C. Woodwardii* of Hewitt Watson, a species founded on the Penhill specimens; but we have seen no description, and do not possess specimens from any of the localities.

7. *C. pratensis* Willd. (*Meadow P.*); creeping, leaves soft mostly radical cauline ones sessile lanceolate waved at the edge or pilose above cottony beneath fringed with minute prickles, heads mostly solitary globose terminal slightly cobwebbed, scales lanceolate closely imbricate mucronate. *Carduus Huds.*: *E. B. t.* 177. *Cirsium Anglicum Lam.*

Low wet pastures. Rare in Scotland; Isla and Arran. 4. 6—8.—About 1—2 ft. high. It is not always easy to distinguish this from the last species: the leaves in *C. tuberosus* are however usually deeply pinnatifid, here they are only sinuate or with small 2—3-cleft lobes. The true *C. Forsteri* Sm. is now allowed to be a hybrid between this species and *C. palustris*, having "leaves slightly decurrent pinnatifid spinous downy beneath, stem panicle hollow, involucre ovate rather cottony, outer scales spinous," and the stems 3—4 ft. high, several from the crown of the root, which is cæspitose. Only single specimens have been here and there observed, particularly in Sussex. Perhaps other hybrids occur, inclining sometimes more to the one parent, sometimes more to the other; but what are usually so called in herbaria are, according to Mr. H. Watson, luxuriant specimens of *C. pratensis* itself.

8. *C. acaulis* Willd. (*dwarf P.*); stem almost none or short, leaves nearly all radical glabrous lanceolate-oblong pinnatifid, lobes somewhat trifid spinous-toothed, heads mostly solitary, involucre obovate-cylindrical glabrous, scales adpressed acute scarcely mucronate, outer ones ovate inner gradually longer. *Carduus L.*: *E. B. t.* 161.— β ? stem much branched, with several heads. *C. dubius Willd.*?

Frequent and destructive in dry gravelly or chalky pastures, in some parts of England, as Dorsetshire and Norfolk.— β . Saffron Walden, Essex: *Mr. G. S. Gibson*. 4. 7, 9.—With β . we are not acquainted; only one plant was found: in cultivation the stemless plant occasionally exhibits a slightly branched stem, but Mr. Borrer supposes the β . to be a hybrid between *C. acaulis* and *C. arvensis*. In the usual form the leaves spread close to the ground; from their centre arises one sessile head of purple flowers.

[*C. oleraceus* is said to have been gathered "wild in Lincolnshire by the late Mr. Cole of Bourne, about 1823," but seems to have disappeared: it is in no way allied to any of our British species, and can have no claim to be indigenous.]

21. *ONOPORDUM* Linn. Cotton-thistle.

Achenes 4-ribbed, glabrous. *Pappus* pilose, rough, sessile, united into a ring at the base and deciduous. *Receptacle* honey-combed. *Involucre* tumid, imbricated, the scales spreading and spinose. *Anthems* with subulate appendages at the apex, shortly caudate at the base.—Name: *ovoc*, an ass, and *περδω*, to *crepitate*; from the effect, according to Pliny, upon the ass which eats it.

1. *O. Acánthium* L. (*common C.*); scales of the involucre spreading subulate, leaves elliptic-oblong sinuate spinous decurrent woolly on both sides. *E. B. t.* 977.

Waste-ground, road-sides, &c., in a gravelly soil. Less frequent in Scotland. ♂. 8.—*Stem* 4—6 feet high, branched and winged at the summit; wings very spinous. *Involucre* globose. *Flowers* purple. The seeds of this and of others of the Thistle tribe are much eaten by birds. It is cultivated in Scotland as the *Scotch thistle*.

22. *CARLINA* Linn. Carline-thistle.

Achenes oblong, cylindrical, silky. *Pappus* feathery, sessile, hairs unequally united at the base. *Receptacle* chaffy, scales irregularly cleft. *Involucre* imbricate, tumid; the outer scales lax with numerous spines; the inner coloured, spreading resembling a ray. *Anthems* with ciliate bristles at the base, and long appendages at the apex.—Name: the same as *Carolina*; from a tradition that the root was shown by an angel to *Charlemagne* as a remedy for the plague which prevailed in his army.

1. *C. vulgáris* L. (*common C.*); stem many-flowered corymbose pubescent, leaves lanceolate unequally spinous and sinuate downy beneath. *E. B. t.* 1144.

Dry hilly pastures, and fields. Rare in the west of Scotland; Galloway; Bennan-head, Isle of Arran. ♂. 6—10.—One foot high, very spinous, but the spines generally short. *Ext. scales* or *leaflets* of the *involucre* much resembling the *leaves*, but smaller; *inner* ones linear, membranous, yellow, entire, spreading and forming a horizontal ray around the purplish *florets*. *Anthems* with two bristles at the base.

[Of *C. racemosa* a single specimen was found in the Isle of Arran, Galway Bay, Ireland, by Mr. Andrews; but truly indigenous species do not occur in an isolated manner, unless where expelled by cultivation.]

23. *CENTAURÉA* Linn. Knapweed, Blue-bottle, and Star-thistle. (Tab. IV. B.)

Achenes compressed. *Pappus* pilose or scaly or none, rarely exceeding the achene in length. *Receptacle* bristly. *Involucre* imbricate. *Florets* of the disk perfect; of the circumference narrow, funnel-shaped, irregular, without stamens or pistil

(neuter), longer than those of the disk, and resembling a ray (sometimes wanting).—So named, because with a plant of this genus it is said the *Centaurea Chiron* cured himself of a wound received in the foot from Hercules.

* *Involucral scales with a broad scarious appendage at the apex.*

1. *C. *Jacea* L. (*brown-rayed* K.); involucral appendages scarious torn the outer pinnatifid, leaves linear-lanceolate, the lower ones broader and toothed, heads rayed, pappus none. *E. B. t.* 1678.

Hedges and waste places. Sussex. Belmont castle and Invercarrity, Angusshire; Craignethan Castle, Lanarkshire. Belfast, Ireland. *Æ.* 8, 9.—*Lower leaves* obovato-lanceolate, petioled, toothed; upper ones entire, sessile. The *appendages* of the *scales* of the *involucre* are pale brown, shining, the outer ones deeply pinnatifid, the middle ones torn, the uppermost sometimes nearly entire, and having the scale itself so elongated as not to be covered by the lower ones. In these respects the usual form differs strikingly from *C. nigra*; but there are occasionally specimens approaching it, and what is called *C. transalpina* is quite intermediate. Smith says that the achenes are “crowned with a simple row of very short black bristles;” in our foreign specimens there is no vestige of a pappus. Only one specimen has been found in Sussex and another in Lanarkshire: the Angusshire plant is more probably the rayed state of *C. nigra*; the Irish one, if wild, is probably in the same predicament.

2. *C. nigræscens* Godr. (*black-rayed* K.); involucral appendages erect lanceolate or ovato-lanceolate pectinate, teeth subulate short, pappus wanting, leaves lanceolate or ovato-lanceolate acute, lower ones sinuato-dentate or lyrato-sinuate or entire, upper sessile.

Meadows and pastures in the west of England. *Æ.* 6—9.—Involucral *appendages* dark, of the outermost small, of succeeding rows gradually broader; the three innermost rows of scales usually protrude, and have roundish irregularly torn appendages. *Heads* usually rayed.—We do not know with certainty what plant is meant; so have drawn up our character from Mr. Babington's description.

3. *C. nigra* L. (*black discoid* K.); involucral appendages ovate quite covering the involucre closely and deeply fringed, teeth spreading capillary twice as long as the breadth of the appendage, lower leaves angulato-dentate sublyrate, upper ones lanceolate, pappus of short linear unequal deciduous scales.—*α.* heads discoid. *E. B. t.* 278.—*β.* heads rayed. *C. nigrescens* Willd.

Meadows and pastures, frequent.—*β.* not uncommon in the S. and W. of England and Wales; rare in Scotland. *Æ.* 6—9.—*Stem* 2—3 ft. high. *Leaves* scabrous. *Scales* of the involucre with black appendages and brown teeth; one or more of the innermost

rows in our *var. β*. is often so long as not to be covered by the outer scales, a structure we have never seen in *var. α*. *Pappus* perhaps never entirely wanting, usually consisting of an outer row of very short blunt scales, and in *var. α*. of numerous longer ones which are often deciduous; these longer ones in our *var. β*. seem either to be few in number, or entirely wanting. We have no objection to unite the rayed form to the last, as we are not aware that cultivation has ever caused it to lose its ray, or the common state of *C. nigra* to obtain one.

** *Involucral scales lanceolate, their upper half with a scarious decurrent margin.*

4. *C. Scabiōsa* L. (*greater K.*); scales of the involucre adpressed with a black pectinate margin, leaves roughish pinnatifid, segments lanceolate acute, pappus pilose about the length of the achene. *E. B. t. 56.*

Barren pastures, corn-fields, and road-sides. Rare in Scotland. 4. 7—9.—*Stem* 2—3 ft. high, erect, much branched. *Involucres* globose, very large; their *scales* usually cottony, with an almost black scarious margin, and paler fringe. Within the outer hairs of the pappus there is an inner row of shorter hairs.

5. *C. Cjānus* L. (*Corn B.*); scales of the involucre adpressed with a brown toothed margin, leaves linear-lanceolate entire, the lowermost toothed or pinnatifid, pappus pilose rather shorter than the achene. *E. B. t. 277.*

Corn-fields, frequent. ☉. 6—8.—*Stem* 2—3 feet high. Covered with a loose cottony down, especially on the stems and under-side of the leaves. *Florets* of the *disk* small, purple; of the *ray* few, larger, bright blue, spreading. *Scales* of the *involucre* greenish, their margins brown. *Outer* row of the hairs of the *pappus* tawny, innermost white.

*** *Involucral scales with palmate or pinnated spines.*

6. *C. Isnārdi* L. (*Jersey S.*); scales of the involucre with palmate nearly equal spines, leaves scabrous, lower ones somewhat lyrate or incise-toothed amplexicaul, upper linear coarsely toothed tapering at the base, heads terminal solitary with one or more leaves at the base. *E. B. t. 2256.* *C. aspera* L.

Pastures in Jersey and Guernsey. 4. 7, 8.—*Flowers* purple. *Spines* of the *involucre* small, nearly equal in size. *Pappus* present in all the florets.

7. *C. Calcitrapa* L. (*common S.*); scales of the involucre glabrous ending in a long broad strong canaliculate spine spinulose at its base, stem divaricated, leaves unequally pinnatifid spinuloso-dentate, heads lateral solitary sessile, pappus none. *E. B. t. 125.*

Gravelly, sandy, and waste places, in the middle and S. of England, especially near the sea. ☉. 7, 8.—*Flowers* purple.—The specific name is derived from an old Celtic and now English word *trap*, a

snare, and *caly*, a *prickle*; whence the Saxon and English word *Caltrops* (an instrument of war with long points), and the French *chaussetrappe*, which last seems to have been *Latinised* into *calcitrapa*.

8. *C. *solstitialis* L. (*yellow S.*); scales of the involucre woolly palmato-spinose ending in a long slender spine, stem winged from the decurrent bases of the lanceolate unarmed entire leaves, radical ones lyrato-pinnatifid, heads terminal solitary. *E. B. t.* 243.

Occasionally seen in fields and waste places, principally in the east and south of England, and near Dublin. ☉. 7—9. — *Flowers* yellow, as are the slender needle-like spines of the *involucre*. *Pappus* rigid.

Tribe III. CORYMBIFERÆ.

Heads either *discoid*; with the florets of each uniform and usually tubular (Tab. IV. C.), or those of the circumference filiform or tubular and pistillate only:—or *rayed* (Tab. IV. D.) when furnished with a ray consisting of ligulate pistillate or neuter spreading florets. Style of the perfect florets not swollen beneath its branches.¹ (Gen. 24—46.)

¹ This tribe is an extensive one, and at first sight will appear less natural and less recognisable by the inexperienced eye, than the two former tribes. The greater number of the genera and species, which compose it, have radiate flowers, and then they are readily distinguished. Of this we have very familiar examples in the *Daisy* (Tab. IV. D.), the *Ox-eye* and the *Leopard's-bane*; but in many cases the ray is so small as to be hardly perceptible, as in the *Cudweeds*; or it is wholly wanting, as in the *Hemp-agrimony*, *Bur-marigold*, and in the *Diotis* or *Cotton-weed* (Tab. IV. C.). In these latter then the florets are all tubular; but the student will observe that the florets do not spread, as in most of the *Thistle* tribe, that the corolla is not remarkably inflated below the mouth, nor is the style swollen below the branches; and he would never think of arranging any one of them with the *Thistles*. A reference to our figures, and a comparison of them with the figures of the two preceding tribes, will show at once the essential distinctions.

Tab. IV. C. Fig. 1. Head of flowers of *Diotis*: the florets all tubular, erect, crowded, parallel (not spreading), surrounded by the scaly and woolly involucre.

Fig. 2. Single floret taken from the receptacle, with its chaffy scale. Within the fringed scale is seen, at the base of the floret, the germen (destitute of pappus), upon which is the tubular corolla, with its two curious ears at the base, and including the stamens and pistil.

Fig. 3. Upper part of the style, showing no swelling.

Figs. 4, 5. Fruits with the withered and persistent base of the corollas.

All more or less magnified.

Tab. IV. D. Fig. 1. Head of flowers of the *Common Daisy* (*Bellis perennis*), showing the tubular florets in the centre, and the ligulate ones forming a ray in the circumference, all within the involucre.

Fig. 2. Involucre with the conical receptacle; all the florets being removed.

Fig. 3. Floret of the ray or circumference, having at its base the germen destitute of pappus, and above it the ligulate or strap-shaped corolla, exhibiting in its short cylindrical base only a style and no stamens: it is, therefore, imperfect, but fertile, the pistil being fertilised by the anthers of the central florets.

Fig. 4. Floret of the centre or disk, having at the base, the germen, destitute of pappus; above that, the tubular corolla, including the stamens and style: it is, therefore, perfect.

All more or less magnified.

The name *Corymbiferæ* was given to this tribe or division of *Compositæ*, because in many cases, as in the *Hemp-agrimony*, *Tansy*, &c., the heads of flowers are arranged in corymbs; but this is by no means universally the case.

Subtribe I. TUBIFLORÆ. *Heads discoid.*¹ (Tab. IV. C.)
(Gen. 24—33.)

* *Pappus of awns or wanting.* (Gen. 24—27.)

24. *BIDENS* Linn. Bur-marigold.

Pappus of 2—5 persistent awns, which are rough with minute deflexed prickles. *Receptacle* chaffy. *Involucre* of many scales; the outer ones or bracteas often leafy. (Heads sometimes with a neuter ray.)—Name: *bis*, double, and *dens*, a tooth; from the awns or teeth which crown the fruit.

1. *B. cernua* L. (*nodding B.*); flowers drooping, bracteas lanceolate entire (longer than the involucre), leaves lanceolate serrate undivided, bristles of the fruit about 3 erect. *E. B.* t. 1114.

Sides of rivulets, ditches, and lakes, frequent. ☉. 7—10.—*Stem* 1—2 ft. and more high, branched and slightly hispid. *Leaves* glabrous, deeply serrate. *Flowers* large, greenish yellow.

2. *B. tripartita* L. (*trifid B.*); leaves tripartite, leaflets lanceolate deeply serrate, bristles of the fruit 2—3. *E. B.* t. 1113.

Marshy places, sides of ponds and lakes. ☉. 7—9.—Readily distinguished by its divided *leaves*. The flowers, which are slightly drooping, are smaller than those of *B. cernua*. Both species have occasionally a ray of 3-toothed neuter florets.

25. *DIÓTIS* Desf. Cotton-weed. (Tab. IV. C.)

Pappus 0. *Cor.* with two ears at the base, which border the germen and remain upon the fruit. *Receptacle* chaffy, its scales fringed. *Involucre* imbricated hemispherical.—Named from *δίς*, two, and *οὐς, ωτος*, an ear; from the ear-like appendages to the fruit.

1. *D. marítima* Cass. (*Sea-side C.*) *Santolina* L.: *E. B.* t. 141.

Sandy sea-shores, principally on the east and south of England. Jersey. 4. 8, 9.—*Root* running deep into the sand. *Leaves* numerous, oblong, covered with a white dense tomentum, as are the scales of the *involucre*, which in a great measure conceal the small yellow *corollas*.

¹ In *Bidens* there is occasionally a true ray; in *Tanacetum* somewhat tubular florets with a short ligule; and in *Artemisia*, *Gnaphalium*, and *Petasites*, slender ones with a filiform inconspicuous erect ligule are sometimes observed in the circumference, but in these cases the heads can scarcely be said to be rayed. On the other hand some species of *Senecio*, in the second subtribe, are without a ray, and some species of *Erigeron* and *Inula* have it erect and so inconspicuous that they might almost be looked for in the present subtribe.

26. TANACÉTUM Linn. Tansy.

Achenes angled, crowned with a large epigynous disk and a membranous margin. *Receptacle* naked. *Involucre* hemispherical, imbricated. *Ligulate florets* short and trifid, or wanting. (Heads *homochromous*.) — Name altered from *Athanasia*; *a*, *not*, and *θανάτος*, *death*; or that which does not quickly fade.

1. *T. vulgäre* L. (*common T.*); leaves bipinnatifid incisolate. *E. B.* t. 1229.

Borders of fields and road-sides. φ . 8. — *Stem* 1—3 ft. high. *Flowers* in a terminal *corymb*. — Whole plant bitter and aromatic, much used in medicine, and also in domestic economy.

27. ARTEMÍSIA Linn. Wormwood, Southernwood, Mugwort.

Achenes obovate, with a minute epigynous disk. *Pappus* 0. *Receptacle* without scales. *Involucre* ovate or rounded, imbricated. *Ligulate florets*, if any, in a single row, short or slender and awl-shaped. (Heads *homochromous*.) — Named from *Artemis*, the Diana of the Greeks.

* *All the florets except those of the margin sterile. Receptacle glabrous. Heads monœcious. Oligosporus.*

1. *A. campéstris* L. (*Field S.*); leaves glabrous above silky beneath once or twice pinnate with linear segments, stems twiggly proeumbent before flowering, scales of the involucre glabrous with a scarious margin. *E. B.* t. 338.

Dry sandy heaths, rare. Norfolk and Suffolk, principally in the vicinity of Thetford and Bury. Belfast. φ . 8, 9. — *Florets* yellow: those of the disk, although apparently perfect, have no ovule in the germen, and therefore never produce seed, which is to be met with only in the single row of marginal pistillate filiform florets.

** *Heads heterogamous, florets not all perfect but all fertile. Receptacle glabrous. Abrotanum.*

2. *A. vulgáris* L. (*common M.*); leaves pinnatifid white and woolly beneath, heads somewhat racemed ovate, scales of the involucre woolly. *E. B.* t. 978.

Hedges and waste places, common. φ . 7—9. — *Stems* 3—4 ft. high, furrowed. *Florets* reddish or brownish yellow.

*** *Heads heterogamous. Receptacle hairy. Absinthium.*

3. *A. Absinthium* L. (*common W.*); leaves bipinnatifid clothed with short silky down, segments lanceolate, heads hemispherical drooping many-flowered, outer scales of the involucre linear silky, inner ones roundish scarious. *E. B.* t. 1230.

Waste places and about villages, in dry soils. φ . 8, 9. — *Stem* 1—1½ ft. high, erect. *Panicles* of flowers erect, leafy. *Floral leaves*

undivided. *Heads* rather large. *Florets* dingy yellow, the marginal pistillate ones very short. — Aromatic and bitter, much used in medicine.

*** *Heads* homogamous (all the *florets* perfect and fertile). *Receptacle* glabrous. *Seriphida*.

4. *A. marítima* L. (*Sea W.*); leaves downy, radical and lower cauline ones bipinnate, upper often pinnate or pinnatifid, segments linear, heads racemed oblong 3—5-flowered. — α . racemes drooping. *E. B. t.* 1706. — β . racemes erect. *E. B. t.* 1001. *A. Gallica* Willd.

Sea-shores and in salt marshes. Rare in Scotland. γ . 8, 9. — What we consider the two *varieties* may be seen growing together, and sometimes from the same root; but De Candolle attributes to α . an *involucre* with constantly 5 *florets*, the inner scales obtuse; and to β . always 3 *florets*, with the inner involucreal scales acute. *A. salina*. Willd. appears to be intermediate.

5. *A. *cærulëscens* L. (*bluish M.*); leaves hoary most of them lanceolate undivided tapering at the base, lower ones variously lobed, heads 3-flowered oblong cylindrical spicate, scales of the involucre hoary subcarinate. *E. B. t.* 2426.

Sea-coast near Boston, Lincolnshire, and at Portsmouth. γ . 8, 9. — No such plant has been found in these localities for many years, and there seems to be no doubt of the allied *A. marítima* having been mistaken for it. (See Dr. Bromfield in the *Phytol.* iii. p. 491.) It is peculiarly a Mediterranean species.

** *Pappus* pilose. (Gen. 28—33.)

28. *EUPATORIUM* Linn. Hemp-agrimony.

Achenes angled or striate. *Pappus* pilose and rough. *Receptacle* naked. *Involucre* imbricated. *Styles* much exserted, with long blunt papillose branches. *Florets* all perfect (never yellow). — Named from *Eupator*, the surname of *Mithridates*, king of Pontus, who is said to have brought this plant into use.

1. *E. cannábinum* L. (*common H.*); leaves downy opposite subpetiolate 3—5-partite, their segments lanceolate deeply serrate, the middle one the longest, heads 5—6-flowered, scales of the involucre about 10, 5 outer ones short obtuse. *E. B. t.* 428.

Banks of rivers and watery places. γ . 7—9. — *Stems* 3—4 ft. high branched. *Heads of flowers* very numerous, pale, reddish-purple, thickly crowded in terminal *corymbs*. — Plant slightly aromatic.

29. *LINOSTÝRIS* Cass. Goldylocks.

Achenes compressed, silky. *Pappus* in a double row, pilose, rough. *Receptacle* naked, pitted, the pits with fleshy toothed margins. *Involucre* of one row of *scales* surrounded by several

long ones, or imbricated. *Style* scarcely longer than the corolla, with short oblong hispid branches. *Anthers* ecaudate. *Florets* all perfect, deeply 5-cleft (yellow). — Named from *linum*, *flax*, and *osyris*, an appellation given by Pliny to a plant with supple branches and leaves like flax, obviously from the Hebrew *asar* or *oser*, *tying* or *binding*, whence also *osier* in English.

1. *L. vulgáris* Cass. (*Flax-leaved G.*); herbaceous, leaves linear glabrous, scales of the involucre leafy loosely spreading, *Chrysocoma Linosyris* L.: *E. B.* t. 2505.

Limestone cliffs, rare. Berryhead, Devon; Worle-hill, Somerset; Ormeshead, N. Wales, abundant. 4. 8, 9. — *Leaves* very numerous, more or less dotted.

30. ANTENNÁRIA Gærtn. Everlasting.

Diœcious. *Pappus* pilose, of the sterile heads thickened or subplumose upwards. *Receptacle* naked. *Involucre* imbricated, the inner scales coloured or scariose at the end. *Anthers* with bristles at the base. — Name from the hairs of the pappus of the sterile florets resembling the *antennæ* of some insects.

1. *A. dioíca* Gærtn. (*Mountain E.*, or *Cat's-foot*); sterile shoots procumbent, flowering-stems erect simple, corymbs crowded, root-leaves spathulate woolly beneath, cauline ones nearly equal linear-lanceolate adpressed. — *a.* leaves greenish and naked above when old. *Gnaphalium* L.: *E. B.* t. 267. — *β.* leaves woolly on both sides. *A. hyperborea* D. Don: *E. B. S.* t. 2640.

Mountain heaths, abundant. — *β.* Isle of Skye. 4. 6, 7. — *Flowering-stems* 3—8 inches high.

2. *A. *margaritácea* R. Br. (*Pearly E.*); sterile procumbent shoots none, stems erect herbaceous tomentose branched above, leaves linear-lanceolate acuminate cottony especially beneath, heads in level-topped corymbs, scales of the involucre (white) obtuse. *Gnaphalium* L.: *E. B.* t. 2018.

Moist meadows, rare. Near Bocking, Essex (*Ray*); banks of the Wye, between Coldwell and English Bicknor; Monmouthshire; banks of the Rumney, Glamorganshire; and near Dolgelly, Merionethshire, Jersey and Guernsey. 4. 8. — A North-American species, much cultivated.

31. GNAPHÁLÍUM Linn. Cudweed.

Heads heterogamous, with one or numerous rows of filiform pistillate florets in the circumference. *Pappus* pilose. *Receptacle* flat and quite naked. *Involucre* imbricated, the scales scariose towards the extremity. *Anthers* with bristles at the base. *Style* of the perfect florets with short truncate branches

ciliate at the apex.—Name: γναφαλον, *soft down* or *wool*, with which the leaves are covered.

* *Filiform florets in many rows; achenes terete.* *Eugnaphalium.*

1. *G. luteo-âlbium* L. (*Jersey C.*); stems herbaceous simple branched from the base, leaves semiamplexicaul linear-oblong waved woolly on both sides, lower ones obtuse, heads in dense leafless corymbs. *E. B. t.* 1002.

Sandy fields, very rare. Jersey. Between Hauxtown and Little Shelford, Cambridgeshire; and Eriswell, Suffolk. ☉. 7, 8.—Not truly wild, except in Jersey. Stem decumbent at the base, then ascending. Heads of flowers yellowish and conspicuous, while those of the following species are not so.

2. *G. sylvaticum* L. (*Highland C.*); stem simple nearly erect downy, heads forming a leafy spike, leaves linear-lanceolate downy.—*α. rectum*; leaves narrow usually nearly glabrous above, spike axillary interrupted. *G. rectum* Sm.: *E. B. t.* 124.—*β. Norvegicum*; leaves lanceolate woolly on both sides, spike terminal continuous. *G. sylvaticum* L.: *E. B. t.* 913. *G. Norvegicum* Jacq.

α. Groves, thickets, and pastures; frequent in Scotland.—*β.* rare and chiefly on the mountains once covered by the Caledonian Forest. Benchat, 5 miles north of Blair-Athole; mountain north of Loch Ericht; and Ben Wyvis, in Ross-shire: *Mr. J. Mackay.* Loch-nagar: *Dr. Balfour.* Canlochan, Fortarshire: *Mr. J. Henderson.* 2. 7—9.—Scales of the involucre oblong, shining with a broad brown border. Sir J. Smith in his *Engl. Flora* (iii. pp. 414—416) has incorrectly removed to our *var. β.* those states of *G. supinum* which have spiked or tufted sessile heads of flowers.

3. *G. uliginosum* L. (*Marsh C.*); stem very much branched diffuse woolly, leaves linear-lanceolate downy, heads in terminal crowded tufts which are shorter than the leaves. *E. B. t.* 1194.

Sandy and wet places; especially where water occasionally stands. ☉. 7—9.—A span high, much branched. Heads of flowers 2—3 together among the closely placed upper leaves, small, sessile, forming oblong clusters at the extremity of the branches. Scales of the involucre yellowish brown, shining, glabrous.

** *Filiform florets in a single row; achenes compressed.* *Omalotheca.*

4. *G. supinum* L. (*dwarf C.*); cæspitose, stem decumbent branching only from the base, flowering-stems erect, heads 1—5, leaves linear downy on both sides.—*α.* heads rather distant stalked. *E. B. t.* 1193.—*β.* heads approximate sessile. *G. sylvaticum* Sm. (partly).

Summits of the Highland mountains, abundant. 2. 7, 8.—Of our two varieties, *β.* is by far the most common, and is that generally known as *G. supinum* abroad; while our *α.*, or Smith's plant, is the

var. γ. of Persoon. *Achenes* white from numerous short adpressed silky hairs, those towards the extremity being a little longer and forming as it were a very short outer *pappus*; in *G. sylvaticum*, the achenes are yellowish, sprinkled with a very few short hairs, and when the *pappus* is removed a callous ring or disk is visible not surrounded by a circle of hairs; but the true distinction between these two species consists in the form of the achene and number of rows of the marginal florets.

32. *FILAGO* Linn. *Filago*.

Heads heterogamous, with one or more rows of filiform pistillate florets in the circumference. *Pappus* pilose, of the outermost row of pistillate florets very caducous or wanting. *Receptacle* conical, with 1—5 rows of scales within or among the filiform florets. *Involucre* imbricated, conical, of a few acuminate scarioso scales. *Anthers* with bristles at the base. *Style* of the perfect florets with short truncate branches ciliate at the apex.—Name: *filum, thread*; the whole plant being covered with slender thread-like hairs.

* *Scales of the receptacle in 1—2 rows.* Oglifa.

1. *F. Gállica* L. (*narrow-leaved F.*); stem erect dichotomous, leaves linear-acute somewhat revolute on the margin, heads crowded in axillary and terminal tufts which are shorter than the leaves. *Gnaphalium* *Huds.*: *E. B. t.* 2369.

Gravelly and sandy fields. Berechurch, Essex; Hertfordshire; and said also to be found in Kent, Suffolk, Worcester, Derby, Fife, and Forfar. ☉. 7—9. — *Stem* about a span high, slender, leafy. *Heads of flowers* small, oblong, in rather distant, leafy fascicles; outer *scales of the involucre* cottony; inner ones glabrous at the points, gibbous at the base and enclosing the marginal florets. Not perhaps truly distinct from the following; in both there are two rows of pistillate florets and scales of the receptacle, which latter are not larger than the inner scales of the involucre, and we fear no other distinctive marks are to be relied on in this genus.

2. *F. mínima* Pers. (*least F.*); stem erect dichotomously branched, leaves linear-lanceolate acute cottony flat adpressed, heads conical few in lateral and axillary tufts which are longer than the leaves. *Gnaphalium* *Sm.*: *E. B. t.* 1157. *F. montana* DC. (not Linn.)

Dry and gravelly places frequent. ☉. 6—9. — *Stems* 4—6 inches high, slender, branched above in a dichotomous manner. *Involucres* broad at the base; *scales* cottony glabrous and slightly obtuse at the point. *Florets* yellowish. — *F. montana* L. (the same as *F. arvensis* L.) differs from this in having a solitary row of pistillate florets separated from the tubular ones by a row of scales larger than the true scales of the involucre: it is so common on the Continent that it may have been passed over in this country.

** *Scales of the receptacle and pistillate florets in 5 rows.* Gifola.

3. *F. Germánica* L. (*common F.*); stem erect usually proli-
ferous at the summit, leaves downy, heads globose-capitate in
the axils of the branches and terminal, scales of the involucre
cottony with the points cuspidate and glabrous. — *α.* heads
obscurely 5-angled not surrounded by leaves, scales of the in-
volucre longitudinally folded yellowish-white at the apex,
leaves oblong or lanceolate, acute or apiculate. *Gnaphalium*
Huds.: *E. B.* t. 946. — *β.* heads prominently 5-angled sur-
rounded by 1—2 blunt leaves, scales cymbiform purplish
towards the apex, leaves grass-green with a yellowish to-
mentum lanceolate obtuse mucronate. *F. apiculata* *G. Sm.*
F. lutescens *Jord.* — *γ.* heads prominently 5-angled surrounded
by 2—3 acute leaves, scales cymbiform yellowish-white at the
apex, leaves of a leaden grey colour spathulate. *F. spathulata*
Presl.

Sandy and gravelly places, and dry pastures. — *β.* and *γ.* in various
places in England. ☉. 7—9. — *Stems* 6—8 inches high, erect,
very leafy, terminated by a globular tuft of small ovate or conical
heads of flowers, from beneath which usually spring 2—3 or more
horizontal branches, in a proliferous manner, each terminated by a
head of flowers. This curious mode of growing occasioned the term
of *Herba impia* to be applied by the old botanists to this plant, as if
the offspring were undutifully exalting itself above the parents. In
α. and *β.* the heads are half sunk in tomentum, and scarcely at all so
in *γ.*

33. PETASITES *Gærtn.* Butter-bur.

Subdiœcious. *Heads* monœcious (of two kinds and on dif-
ferent plants; either with many central tubular sterile *florets*
surrounded by a row of truncate filiform fertile pistillate ones;
or with 1—5 central sterile tubular florets surrounded by many
rows of filiform fertile pistillate ones). *Pappus* pilose. *Anthers*
without bristles at the base. *Receptacle* naked. *Involucre*
imbricated in two rows of lanceolate herbaceous scales. (*Seapes*
with a many-headed thyrsus, appearing before the leaves.) —
Name: *πετασος*, a covering to the head, or an umbrella; from the
great size of its foliage.

1. *P. vulgâris* Desf. (*common B.*); leaves roundish-cordate
unequally toothed downy beneath, the lobes approximate. — *α.*
florets nearly all sterile. *Tussilago Petasites* *L.*: *E. B.* t. 431.
— *β.* florets nearly all fertile. *Tuss. hybrida* *L.*: *E. B.* t. 430.

Wet meadows, to which it is very injurious, and road-sides.
4. 3—5. — *Rhizome* extensively creeping, and thus multiplying the
plant. *Leaves* very large. *Flowers* (appearing before the leaves) of
a pale flesh colour, smaller, more lax, and in a longer thyrsus on the

fertile plant. The early blossoming of this rank weed induces the Swedish farmers to plant it near their bee-hives. Thus we see in our gardens the bees assembled on its affinities, *P. alba* and *fragrans*, at a season when scarcely any other flowers are expanded.

[Of *Homogyne alpina* Cass. or *Tussilago alpina* L., there is a specimen in Herb. Brodie, from G. Don, with the following station attached to it: "On rocks by the sides of rivulets on the high mountains of Clova, as on a rock called Garry-barns;" and the same is mentioned in Headrick's Agric. of Forfarshire; but we are not on that account prepared to admit the plant as indigenous. *P. fragrans* Presl is said to be naturalized in some places in the south of England and Wales: this is *Tuss. fragrans* L. and *Nardosmia fragrans* Reich. *Nardosmia* differs only from *Petasites* by the pistillate florets having a ligule, which however is sometimes minute.]

Subtribe II. RADIATÆ. Heads with a ligulate ray. (Tab. IV. D.)
(Gen. 34—46.)

* *Pappus pilose in the florets of the disk, sometimes wanting in those of the ray.* (Gen. 34—42.)

34. TUSSILÁGO Linn. Colt's-foot.

Heads monœcious, all alike. Achenes terete. *Pappus* pilose. Florets of the ray long, narrow, numerous in many rows; of the disk few, sterile (both yellow). Anthers without bristles at the base. Receptacle naked. Involucre formed of a single row of equal linear scales. (Scapes single-flowered, appearing before the leaves.) — Name altered from *tussis*, a cough; in the cure of which the plant has been employed.

1. *T. Fáfara* L. (*Colt's-foot*); scape single-flowered imbricated with scales, leaves cordate angular toothed downy beneath. *E. B.* t. 429.

Moist and clay soils, too abundant. 2 3, 4.—Flowers yellow; florets of the disk few. The down of the leaves makes good tinder. The leaves themselves have been used medicinally, as an infusion, or smoked like tobacco, for the relief of asthma.

35. ERÍGERON Linn. Flea-bane.

Achenes compressed. *Pappus* pilose, rough. Florets of the disk fertile; of the ray numerous in several rows, very narrow (of a different colour from the disk). Receptacle naked. Involucre imbricated with linear scales. Anthers without bristles at the base.—Named from *ἥρι*, early, and *γέρων*, an old man; from the early ripening of the gray seed-down.

1. *E. * Canadensis* L. (*Canada F.*); usually hairy, leaves lanceolate nearly entire harshly ciliate, heads numerous panicled, ray shorter than the involucre. *E. B.* t. 2019.

Waste and cultivated ground, in England, occasionally. ☉. 8, 9. — *Florets* of the *disk* whitish-yellow; of the *ray* whitish, tinged with red, scarcely longer than the *pappus*.

2. *E. ácris* L. (*blue F.*); peduncles 1-headed alternate somewhat corymbose, ray erect scarcely longer than the disk, inner pistillate florets filiform, pappus as long as the florets of the ray, leaves lanceolate obtuse. *E. B. t.* 1158.

Dry gravelly or chalky pastures, walls, &c. ♂. 7, 8. — *Stems* 1—1½ ft. high; whole plant scabrous, hispid, erect, panicked above and leafy; *heads* of flowers terminal, pedunculate from the axils of the leaves. *Leaves* below tapering into a foot-stalk. *Florets* of the *disk* yellow; of the *ray* ligulate, purplish. *Pappus* tawny.

3. *E. alpinus* L. (*alpine F.*); stem with one or few heads, florets of the ray nearly twice as long as the involucre, innermost pistillate florets tubular-filiform without a ligule, leaves lanceolate, radical ones spatulate. *E. B. t.* 464. *E. uniflorus* Sm.: *E. B. t.* 2416.

Highland mountains, not uncommon on the Breadalbane and Clova ranges. ♀. 7, 8. — Hairy or hispid, like the last, but with *leaves* much longer in proportion. *Stem* 3—5 inches high, simple with rarely more than one *head of flowers* at the summit. The *ligules* of the pistillate *florets* become gradually narrower and sometimes shorter as they approach the disk, the innermost row being wholly or partially destitute of them. We have examined original specimens of Smith's *E. uniflorus* from G. Don, from Ben Lawers: they have quite the structure of the florets of *E. alpinus*, although the ligules be shorter and more erect from growing in a more exposed situation; the involucre, although rather more hairy, is not woolly as in the arctic *E. uniflorus* of Linnæus.

36. A'STER Linn. Starwort. Michaelmas Daisy.

Achenes compressed. *Pappus* pilose, in many rows. *Receptacle* naked. *Involucre* imbricated, sometimes with a few scales on the peduncle. *Anthers* without bristles at the base. *Florets* of the disk yellow; of the ray purple or white, and in 1 or very rarely 2 rows. — Name: *aster*, a *star*; which the flowers resemble.

1. *A. Tripólium* L. (*Sea S. or M.*); stem glabrous corymbose, leaves linear-lanceolate fleshy obscurely 3-nerved, scales of the involucre lanceolate membranous obtuse all imbricated, the inner ones longer. *E. B. t.* 87. *Tripolium vulgare* Nees.

Salt-marshes, frequent. ♀. 8, 9. — The florets of the ray are sometimes wanting.

37. SOLIDÁGO Linn. Golden-rod.

Achenes terete. *Pappus* pilose, rough, in a single row. *Receptacle* naked. *Involucre* closely imbricated. *Anthers* without

bristles at the base. *Florets* of the ray few, in one row, and, as well as those of the disk, yellow.—Name: *solidare*, to unite; from the vulnerary properties that have been attributed to some species.

1. *S. Virgaúrea* L. (*common G.*); cauline leaves lanceolate, racemes panicle erect crowded, involucre scales lanceolate acute, achenes slightly downy.—*α.* tall, lower leaves elliptical. *E. B.* t. 301.—*β.* small, with broader radical leaves and larger heads. *S. Cambrica* *Huds.*—*γ.* leaves all lanceolate.

Woods and thickets.—*β.* and *γ.* in mountainous countries. *ϑ.* 7—9.—Lower leaves broad, stalked. Very variable in its size, and in its more or less compact *inflorescence*. Used as a vulnerary and diuretic.

[*S. lanceolata* L. has been sometimes found naturalized: it is a North American species.]

38. *SENÉCIO* Linn. Groundsel. Ragwort. Fleawort.

Achenes terete, all of them with a pilose *pappus*. *Receptacle* naked. *Involucre* cylindrical, its scales linear, equal, with or without several smaller ones at the base, their tips often brown. *Anthems* without bristles at the base. *Style* scarcely longer than the corolla, truncate and ciliate at the extremities of its branches. (*Flowers*, in the British species, yellow, their ray sometimes wanting.)—Named from *senex*, an *old man*. (See *Erigeron*.)

* *Florets* of the ray ligulate and rolled back, or wanting.

1. *S. vulgáris* L. (*common G.*); ray revolute or usually wanting, leaves semiamplexicaul pinnatifid toothed, heads in clustered corymbs, involucre conical glabrous, outer scales very short, achenes silky. *E. B.* t. 747.

Waste ground, fields, and hedges, abundant. ☉. 1—12.—A span to a foot high. *Heads* of *flowers* small, yellow. Birds are fond of the buds and young leaves.

2. *S. viscósus* L. (*stinking G.*); ray revolute, leaves pinnatifid glandular-hairy viscid, scales of the involucre lax hairy, stem branching diffuse, involucre viscid, outer scales half the length of the inner, achenes glabrous. *E. B.* t. 32.

Waste ground, especially on chalky or gravelly soil, in many places. ☉. 7, 8.—*Stems* 1—2 feet high, much branched and spreading. Remarkable for its viscid hairs and fetid smell.

3. *S. sylváticus* L. (*Mountain G.*); ray revolute sometimes wanting, leaves sessile pinnatifid lobed and toothed, involucre downy, outer scales very short glabrous, stem erect straight, heads corymbose, achenes silky.—*α.* leaves more or less dilated

at the base. *E. B.* t. 748. — β . leaves distinctly auricled and amplexicaul at the base. *S. lividus* *L.* ? : *E. B.* t. 2515.

Dry upland soils, banks, and gravelly pastures. ☉. 7—9. — Stem $1\frac{1}{2}$ —2 ft. high. Plant with a disagrecable smell, but not so powerful as that of *S. viscosus*. The *S. lividus* of Linn. is a Spanish species, and unknown to us; but whatever it be, we fear the plant of *E. Bot.* cannot be considered specifically distinct from the present.

** Heads with a spreading ray. Involucre with small scales at the base. Leaves pinnatifid.

4. *S. * squálidus* *L.* (inelegant *R.*); ray spreading its ligules elliptical entire, leaves glabrous pinnatifid, with distant oblong and toothed segments, involucre glabrous, its outer scales few small, achenes silky. *E. B.* t. 600.

On walls in and about Oxford. Walls and rubbish at Bideford, Devon. ☉. 6—10. — A most distinct species, but scarcely indigenous.

5. *S. tenuifólius* *Jacq.* (hoary *R.*); ray spreading its ligules oblong, leaves closely pinnatifid pale and downy beneath, segments linear their margins somewhat revolute, stem erect loosely cottony, outer scales half as long as the inner, all the achenes silky. *E. B.* t. 574. *S. crucæfolius* *L.* ?

Hedges and road-sides in England, especially in a chalky or gravelly soil. Woodhall, near Airdrie; Berwickshire, in various places. 2. 7, 8. — Allied to the following, but with more regular, less divided, and less spreading segments to the leaves. Rhizome creeping.

6. *S. Jacobæ'a* *L.* (common *R.*); ray spreading, leaves lyrate bipinnatifid, segments divaricated toothed glabrous, stem erect, achenes of the disk hairy, those of the ray glabrous, involucre hemispherical. *E. B.* t. 1130.

Way-sides and neglected pastures, too plentiful. 2. 7—9. — Stems 2—3 feet high, striate, branched. Heads of flowers large, golden-yellow, in erect corymbs. A var. is occasionally found without the ray.

7. *S. aquáticus* *Huds.* (Marsh *R.*); ray spreading, leaves lyrate serrate glabrous the lowermost obovate and undivided, involucre hemispherical, achenes all glabrous. *E. B.* t. 1131.

Wet places and by the sides of rivers and ditches. 2. 7, 8. — Heads of flowers larger than in the last species.

*** Heads with a spreading ray. Involucre with small scales at the base. Leaves undivided.

8. *S. paludósus* *L.* (great Fen *R.*); ray spreading its ligules toothed, leaves semiamplexicaul lanceolate sharply serrate somewhat woolly beneath, stem perfectly straight hollow rather

woolly, corymbs terminal spreading, bracteas subulate. *E. B.* t. 650.

Very rare; perhaps now extinct. Ditches and fens in the east of England; Suffolk, Lincolnshire, and Cambridgeshire. *¶*. 6, 7.—*Stem* 5—6 feet high. *Leaves* and *heads of flowers* large, the latter of many linear toothed rays.

9. *S. Saracenicus* L. (*broad-leaved G.*); ray spreading its ligules nearly entire, leaves lanceolate sessile minutely and irregularly serrate glabrous, stem erect solid glabrous, corymbs terminal of rather few flowers, bracteas linear-setaceous. *E. B.* t. 2211.

Moist meadows and pastures, in several parts of England and Scotland, but very local, and probably often escaped from gardens. Woods at Bantry. *¶*. 7, 8.—*Stem* 3—5 feet high: habit of the last; *heads of flowers* much smaller, with broader *florets* of the *circumference*, which are sometimes wanting.

**** *Heads with a spreading ray. Involucre without scales at the base. Leaves nearly entire.*

10. *S. palustris* DC. (*Marsh F.*); shaggy, stem much branched fistulose, leaves broadly lanceolate semiamplexicaul, lower ones sinuato-dentate, heads corymbose, achenes glabrous many-ribbed. *Cineraria* L.: *E. B.* t. 151.

Margins of pools and ditches, rare; chiefly in Norfolk and Cambridgeshire. *¶*. 6, 7.—*Ligulate florets* about 20.

11. *S. campestris* DC. (*Field F.*); woolly, stem simple, root-leaves elliptical narrowed below nearly entire those of the stem (small) lanceolate, flowers umbellate, achenes downy. *Cineraria Retz.* *C. integrifolia* With.: *E. B.* t. 152.

Chalky downs in the middle and south of England; and on maritime rocks, Holyhead. *¶*? ♂? 5, 6.—*Ligulate florets* 9—12. Ribs of the *achenes* not prominent.

39. DORONICUM Linn. Leopard's-bane.

Achenes terete. *Pappus* pilose, wanting to the florets of the ray. *Receptacle* naked or nearly so. *Involucre* with the scales equal, in a double row. *Authers* without bristles at the base. *Style* scarcely longer than the corolla, truncate and ciliate at the extremity of its branches. (*Flowers* yellow.)—Named from *δωρον*, a gift, and *νικη*, victory; because it is said to have been formerly used to destroy wild beasts, whence the English name of *leopard's-bane*: or, some say, from *doronigi*, or *durungi*, the Arabic name of the *leopard's-bane*, Latinized by earlier botanists into *doronicum*, and enumerated by Linnæus among barbarous names which ought to be rejected. He, however, retained it, perhaps because its sound, if not its sense, is Greek.

1. *D. * Pardalianches* L. (*great L.*); leaves cordate toothed the lowermost on long naked petioles, the intermediate with the petioles dilated into two broad semiamplexicaul ears at the base, the uppermost sessile and amplexicaul. *E. B. S.* t. 2654.

Damp and hilly woods and pastures, rare. An outcast from gardens, but apparently now well-established in several parts of England and southern half of Scotland. 4. 5—7. — *Stem* simple or corymbosely branched, the lateral branches being much longer than the shortly stalked head that terminates the stem. *Achenes* of the disk hairy; of the ray glabrous (or slightly hairy. *DC.*).

2. *D. * plantaginæum* L. (*Plantain-leaved L.*); leaves toothed, radical ones on naked stalks ovate or slightly cordate produced at the base, cauline ones sessile except the lowest which has a winged stalk with amplexicaul auricles, intermediate ones cordate oblong, upper ovate-acuminate, achenes of the ray glabrous. *D. Pardalianches Sm.*: *E. B.* t. 630.

Damp places, rare. Like the last species, only an escape from cultivation. 4. 6, 7. — *Stem* simple or branched, *heads* on long leafless peduncles. The allied *D. scorpioides* has the *achenes* of the ray as hairy as those of the disk.

40. *INULA* Linn. *Inula.*

Achenes terete or angled. *Pappus* pilose, in 1 row. *Receptacle* naked. *Involucre* imbricated. *Anthems* with bristles at their base. (*Flowers* yellow.) — Name said to be a contraction of *Helenium*, the plant being supposed to have sprung from the tears of Helen.

1. *I. Helénium* L. (*Elecampane*); leaves amplexicaul somewhat toothed ovate wrinkled downy beneath, outer scales of the involucre ovate downy reflexed leafy, inner ones obovate, ray twice as long as the disk, achenes 4-angled glabrous. *E. B.* t. 1546.

Moist pastures rare, but found in several places of England, and Ireland. Not wild in Scotland. 4. 7, 8. — *Stem* 3—5 feet high, branched. *Heads* large, terminal, solitary, with many narrow, tricuspidate yellow rays.

2. *I. Conýza* DC. (*Ploughman's Spikenard*); leaves pubescent ovato-lanceolate serrate the upper ones entire, stem herbaceous corymbose, scales of the involucre all linear recurved leafy, ray scarcely longer than the disk, achenes terete slightly hairy. *Conyza squarrosa L.*: *E. B.* t. 1195.

Frequent on chalky or clay soils. Rare, if really wild, in Scotland. 4. 7—9. — *Stem* 2—3 feet high. *Panicle* leafy with the leaves entire. Lower leaves stalked. *Heads* almost discoid: *florets* of the circumference very small, filiform with a short ligule.

3. *I. crithmoïdes* L. (*Golden-Samphire*); leaves linear fleshy generally 3-toothed at the extremity, scales of the involucre adpressed linear acuminate, ray nearly twice the length of the disk, achenes terete villous. *E. B.* t. 68.

South and west shores of England and Wales, in salt-marshes, and on sea-side rocks; extending as far north as Galloway in Scotland. Howth, Ireland. γ . 7, 8. — One foot high, a little branched at the summit, each branch bearing a solitary head of flowers.

41. *PULICÁRIA* Gært. Flea-bane.

Achenes somewhat terete. *Pappus* double: outer one short membranous; inner pilose, rough. *Receptacle* naked. *Involucre* hemispherical, closely imbricated with numerous scales. *Anthems* with bristles at their base. (*Flowers* yellow.)—Name: *pulex*, a flea; which is supposed to be driven away by its powerful smell.

1. *P. dysentérica* Gært. (*common F.*); leaves oblong cordate or sagittate and amplexicaul at the base wrinkled downy, stem woolly panicle, scales of the involucre setaceous, ray twice as long as the disk, outer pappus cup-shaped crenulate. *Inula L.*: *E. B.* t. 1115.

Moist and watery places, frequent in England and in the county of Dublin. Rare in Scotland; Mull of Galloway; Bennan-head, Arran. γ 7—9. — About 1 foot high.

2. *P. vulgáris* Gært. (*small F.*); leaves lanceolate wavy hairy narrow at the base and semiamplexicaul, stem much branched hairy, ray scarcely longer than the disk, outer pappus setulose-laciniate. *Inula Pulicaria L.*: *E. B.* t. 1196.

Moist sandy places, especially where water has stood, in the south-east of England; not found in Scotland or Ireland. ☉. 8, 9.

** *Pappus* none, or of short teeth or scales only. (Gen. 42—46.)

42. *BÉLLIS* Linn. Daisy. (Tab. IV. D.)

Achenes compressed, with a minute epigynous disk. *Pappus* none. *Receptacle* naked, conical. *Involucre* hemispherical, its scales obtuse, equal, in a single row. (Florets of the disk yellow, those of the ray white tinged with red.)—Named from *bellus*, pretty.

1. *B. perénis* L. (*common D.*): perennial, scape single-headed, leaves spatulate obovate crenate 1-nerved. *E. B.* t. 424.

Pastures, frequent. γ . 2—10. — Who is there, whether in youth or in age, that is not sensible of the charms of this “modest crimson-tipped flower”? It is, therefore, in France called *Marguerite*, a term expressive of beauty, from *margarita*, a pearl.

43. *CHRYSAÑTHEMUM* Linn. Ox-eye.

Achenes of the disk somewhat terete : epigynous disk large. *Pappus* 0. *Receptacle* naked. *Involucre* hemispherical or nearly flat ; the scales imbricated, membranaceous at their margins.—Name: χρυσός, *gold*, and ἄνθεμον, a *flower* ; from the colour of the blossoms in some of the species.

* *Achenes* of the disk and ray similar. *Leucanthemum*.

1. *C. Leucanthemum* L. (*great white O.*) ; leaves oblong obtuse cut and pinnatifid at the base, radical ones obovate petiolate, stem erect branched (ray white). *E. B.* t. 601.

Dry pastures, abundant. 4. 6—8.—*Stems* 1—2 feet high, furrowed. *Heads* of flowers large, their disk yellow, the ray white.

** *Achenes* of the ray angled and somewhat winged.

2. *C. ségetum* L. (*Corn Marigold, or yellow O.*) ; leaves amplexicaul glaucous inciso-serrate above toothed at the base, (ray yellow). *E. B.* t. 540.

Corn-fields, frequent ; rare about Edinburgh. ☉. 6—9.—One foot or more high. *Flowers* large, deep yellow.

44. *MATRICÁRIA* Linn. Wild-Chamomile. Feverfew.

Achenes all angular, crowned with a large epigynous disk. *Pappus* a membranaceous border, or wanting. *Receptacle* naked. *Involucre* conical, hemispherical or nearly flat, the scales imbricated, usually membranaceous at their margins.—Named from its reputed medicinal virtues.

1. *M. Parthénium* L. (*common F.*) ; leaves petiolate flat bipinnate the segments ovate cut, peduncles branched corymbose, stem erect, involucre hemispherical downy, receptacle convex, pappus short toothed. *Pyrethrum Sm.* : *E.B.* t. 1231.

Waste places and in hedges. 4. 7—9. — *Stem* 1—2 ft. high, branched. *Disk* yellow ; *ray* very short, white. *Plant* bitter and tonic.

2. *M. inodóra* L. (*Corn F., or scentless Mayweed*) ; leaves sessile bipinnatifid the segments capillary, stem branched spreading, receptacle convex, scales of involucre lanceolate obtuse, achenes with two glandular depressions on the external face below the elevated border, pappus entire or 4-lobed. — *α. vulgaris* ; border of fruit entire glandular, depressions round. *Pyrethrum Sm.* : *E. B.* t. 676. — *β. marítima* ; leaves more fleshy, border of fruit lobed glandular depressions elongated. *M. marítima L.* *Pyrethrum Sm.* : *E. B.* t. 979.

Fields and way-sides, common. — *β.* sea-coast in many places, especially in Scotland. ☉. 6—10. — *Stem* about 1 foot high.

Flowers large, upon long naked peduncles. *Disk* very convex; *ray* large. Plant slightly aromatic. *Achenes* with 3 prominent thick smooth ribs and more or less rugose intermediate spaces; of these last the two internal ones are narrow, the external one broad and marked at the apex with an imperfect smooth rib, on each side of which there is a roundish smooth glandular depression. In the *var. β*. the ribs are broader than in *var. α*., and consequently all the intervening spaces and the glandular depressions are narrower; but they seem to vary in this respect in the same head.

3. *M. Chamomilla* L. (*common W.*); leaves glabrous bipinnatifid the segments capillary, involucre nearly plane its scales linear obtuse, receptacle cylindrical-oblong hollow. *E. B. t.* 1232.

Corn-fields and waste ground, in various places. ☉. 6—8. — *Stem* about 1 foot high, erect and branched. *Heads of flowers* with a conical *disk*; the *ray* very obtuse, truncate and toothed. *Receptacle* narrow, much elevated, twice as long as broad, and often acute. *Scales* of the *involucre* scarcely so membranaceous at the margin as in the preceding species. This has a bitter taste, and a faint but aromatic smell, not unlike that of the common or true *Chamomile* (*Anthemis nobilis*).

45. A'NTHEMIS Linn. Chamomile.

Achenes terete or obscurely 4-angled. *Pappus* a membranaceous border or 0. *Receptacle* convex, chaffy. *Involucre* hemispherical or nearly plane, the scales imbricated, membranaceous at their margins. *Florets* of the *disk* terete, of the *ray* oblong-linear.—Name: ἀνθεμῖς, a *flower*; from the profusion of its blossoms.

* *Florets of the ray with a style.*

† *Scales of the receptacle thin, membranous, obtuse.*

1. *A. nobilis* L. (*common C.*); leaves bipinnate segments linear-subulate a little downy, receptacle conical its scales scarcely longer than the disk. *E. B. t.* 980.

Dry gravelly pastures and waste places, in several parts of England. Isles of Islay, Cumbrae, and Butc, Scotland. Kerry, Ireland. 4. 7—9. — *Stem* about a foot long, procumbent and much branched; each branch terminated by a single *flower*, whose *disk* is yellow, at length conical, and *ray* white. The whole plant is intensely bitter, highly aromatic and much used medicinally. Its principal virtues are supposed to reside in the *involucre*, which contains an essential oil.

†† *Scales of the receptacle with an acute rigid point.*

2. *A. *A'nglica* Spr. (*Sea C.*); leaves pinnatifid somewhat hairy, lobes inciso-serrate acute bristle-pointed rather fleshy, "receptacle flat, its scales subulate shorter than the opened florets, achenes crowned with a very narrow entire border." —*Bab. A. maritima* L.? Sm.?: *E. B. t.* 2370.

Sea-coast at Sunderland: *Mr. Robson*; *Mr. Backhouse* (1844.) ☉.
 7. — With this we are entirely unacquainted: it is probably some Continental species east upon our shores, and in an abnormal state. De Candolle and others maintain that it is quite different from the true plant of Linnæus, which is apparently that described by Smith in the English Flora, a species supposed to be peculiar to the south of Europe, having fleshy glabrous or hoary dotted leaves, and an unequally and broadly 1—2-toothed margin to the achenes. — The plant mentioned in our fifth edition as having been found at Dunboy Quay, Bearhaven, Co. Cork, Ireland, by Mr. W. Wilson, proves to be *Anacyclus radiatus* Lois., brought there perhaps with ballast.

3. *A. tinclória* L. (*Ox-eye C.*); leaves bipinnatifid serrate downy beneath, stem erect branched subcorymbose, receptacle hemispherical, achenes crowned with an entire border. *E. B.* t. 1472.

Fields and stony places. Banks of the Tees, Durham; Essex; and near Forfar, Scotland, ☉ or ♂. 7, 8. — *Stem* a foot or more high, cottony, as are the *scales* of the *involucre*. *Flowers* solitary, large, entirely yellow. A very doubtful native, not now found in any of the stations assigned for it; it is often cultivated.

4. *A. arvensis* L. (*Corn C.*); leaves bipinnatifid segments linear-lanceolate pubescent, receptacle conical its scales lanceolate, fruit crowned with an entire pappus. *E. B.* t. 602.

Corn-fields and way-sides, in several places, but very local. About Dunfermline; near Edinburgh, Linlithgow, Ayr, and Prestwick; Lanarkshire and Forfarshire. ☉ or ♂. 6—8. — *Stem* upright much branched, and, as well as the *leaves*, hoary with down; each branch terminated with a large *flower*, whose *disk* is yellow, the *ray* broad and white. *Florets* of the *ray* sometimes sterile; in which case almost the only certain character connected with the flowers, that will distinguish this species from *A. Cotula*, is the presence of a style.

** *Florets* of the *ray* without any trace of a style. *Scales* of the *receptacle* with an acute point.

5. *A. Cótula* L. (*stinking C.*): leaves bipinnatifid glabrous their segments subulate, receptacle conical its scales linear-setaceous, pappus none, tube of the corolla 2-winged. *E. B.* t. 1772.

Waste places, corn-fields, and by road-sides. ☉. 6—9. — *Stem* a foot or more high, glabrous. *Heads* of *flowers* solitary, terminal, their *disk* convex, pale yellow: *ray* rather large, white, its *florets* *neuter* (inaccurately represented with a style in *E. Bot.*) The whole plant has a fetid smell, and is said to blister the hands of those who gather it. When examined with a microscope, it is seen to be sprinkled all over with little glands, in which the acrid matter is probably lodged. The Scotch stations, and many of those in the north of England, usually given for this species, belong to *A. arvensis*.

46. *ACHILLÉA* Linn. Yarrow. Milfoil.

Pappus 0. *Receptacle* flat, chaffy. *Involucre* ovate, imbricated. *Florets* of the *ray* 5—10, roundish or obcordate.—So named because its healing virtues were said to be first discovered by *Achilles*.

1. *A. Ptármica* L. (*Sneeze-wort*); leaves shining glabrous linear-lanceolate acuminate uniformly and sharply serrate, serratures adpressed scabrous at the margin, ray 8—12-flowered. *E. B. t.* 757.

Moist meadows and pastures, especially in mountainous districts, *¶*. 7, 8.—*Stem* 1—3 feet high, erect, terminating in a rather large *corymb*, the *disk* as well as *ray* of whose *flowers* is white. *Leaves* sometimes slightly dotted.—When dried and pulverized the plant has been employed to excite sneezing.

2. *A. *decolórans* Schrad. (*dotted-leaved Y.*); leaves downy closely dotted linear-lanceolate coarsely and doubly serrate pectinate at the base, serratures spreading, segments at the base radiating, ray 5—6-flowered. *A. serrata* Sm. (not Retz.): *E. B. t.* 2531.

Near Matlock, Derbyshire. *¶*. 9.—Commonly cultivated in gardens under the name of *A. alpina*, to which, as well as to *A. serrata*, it appears to approach very closely; the native country of all the three would seem to be Siberia, if indeed some be not mere garden productions. *Ligules* buff-coloured.

3. *A. *tanacetifolia* All.? (*Tansey-leaved Y.*); leaves bipinnatifid with a broadly winged serrate midrib, segments broad and teeth of the midrib inciso-serrate.

Ringmoor Low, near Sheffield; Cromford Moor, Derbyshire. *¶*. 7.—We have seen no British specimens, and do not know what species is meant; the above character is therefore abridged from Mr. Babington's manual, who adds that the root-leaves have a lanceolate, the stem ones an oblong outline, usually bipinnatifid, but sometimes only once pinnatifid; rachis with large inciso-serrate teeth especially just under the pinnæ. It is probable that the above is *A. dentifera* DC., or *A. magna* All.; the true *A. tanacetifolia* is said by De Candolle to have an entire rachis. The allied species are so much cultivated in gardens, that we doubt of this and the last being truly indigenous.

4. *A. Millefolium* L. (*common Y. or M.*); leaves deeply bipinnatifid, lobes incise, segments linear acute, stems furrowed, scales of the involucre nearly glabrous. *E. B. t.* 758.

Pastures and way-sides, frequent. *¶*. 6—9.—*Heads* of *flowers* small, white, or sometimes rose-coloured. *Leaves* woolly or nearly glabrous. The quality of this plant is highly astringent, and the Highlanders are said to make an ointment of it, which dries and heals wounds.

5. *A. *tomentosa* L. (*woolly yellow M. or Y.*); leaves woolly pinnatifid, lobes crowded 2—3-cleft, segments linear acute, corymbs repeatedly compound, scales of the involucre woolly. *E. B. t.* 2532.

Dry hilly pastures, in Scotland. Spittle-hill, north-west of Balvic, Dumbartonshire: and near Paisley. Auchlunkart, Banffshire: *P. Stewart, Esq.* Near Newcastle, Co. Down, Ireland: *Miss Keown* 4. 8.—*Stem* a span or rather more in height. Readily recognised by its small size, downy leaves, and much branched corymbs of yellow flowers. Formerly much cultivated as a medicinal plant, as well as for its beauty.

Anomalous Genus.

47. *XÁNTHIUM*¹ Linn. Bur-weed. (Tab. V.)

Monœcious.—*Barren fl.* Involucre of few scales, with many small capitate flowers, upon a common receptacle. *Cal.* 0. *Cor.* obovate, sessile. *Anthers* terminating a tube which is inserted at the base of the cor. *Germen* abortive.—*Fertile fl.* Involucre single, prickly, with two beaks, entirely closing 2 flowers; the 2 stigmas only protruded from small apertures within the beaks. *Cal.* 0. *Cor.* 0. *Fruit* 1-seeded, included in the enlarged and hardened involucre.—Named from ξανθος, yellow or fair; because an infusion of this plant was supposed to improve the colour of the hair.

1. *X.*strumarium* L. (*broad-leaved B.*); stem unarmed, leaves cordate angulato-dentate with 3 principal nerves at the base, fruit downy its beaks straight the prickles hooked. *E. B. t.* 2544.

Rare, in waste ground in the south of England, and Kerry, Ireland. ☉. 8, 9.—A rank, weed-like plant, remarkable for the curious structure of its flowers, and the prickly involucre which surround the fertile ones, enlarging and becoming part of the fruit. It is scarcely naturalized, and rarely ripens seed in the south of England.

¹ Tab. V. represents, at fig. 1., a flowering specimen of *Xanthium strumarium*; the upper clusters or heads consist of barren, the lower of fertile, flowers.

Fig. 2. Scale of the involucre with a barren flower, exhibiting the corolla and the staminal tube with five anthers.

Fig. 3. Fertile flower; consisting of a prickly monophyllous involucre with 2 beaks, and the branches of the styles protruded beyond the beaks.

Fig. 4. The same cut open to show the two pistils or flowers without calyx or corolla.

Fig. 5. Fruit enveloped by the persistent involucre (natural size).

Fig. 6. Single fruit.

Fig. 7. Seed.

Fig. 8. Embryo.

Fig. 9. The same, one cotyledon being removed.

Fig. 10. The same, cut vertically through the two cotyledons.

ORD. XLVII. CAMPANULACEÆ *Juss.*

Calyx-tube adnate with the *ovary*, mostly 5-lobed, lobes persistent. *Corolla* regular or irregular, mostly 5-lobed, marcescent; æstivation valvular. *Stamens* free from the corolla and equal in number with its segments, free or more or less combined. *Anthers* 2-celled, distinct or rarely cohering, opening longitudinally. *Ovary* with two or more polyspermous cells. *Style* 1, pubescent on the upper half. *Stigma* simple or lobed, naked (not surrounded by a circle of hairs). *Fruit* dry, opening between the dissepiments. *Seeds* fixed to the axis. *Albumen* fleshy: *embryo* straight.—Herbaceous or suffruticose. Leaves mostly alternate, without stipules. Flowers generally blue or white. Lactescent and bitter.

1. CAMPANULA. Cor. campanulate or subrotate; segments broad and shallow.
2. PHYTEUMA. Cor. rotate; segments long, linear. Anthers distinct.
3. JASIONE. Cor. rotate; segments long, linear. Anthers cohering at their base.

1. CAMPÁNULA *Linn.* Bell-flower.

Cor. campanulate or subrotate with 5 broad and shallow segments. *Filaments* more or less dilated at the base; *anthers* distinct. *Stigma* 2—5-fid. *Caps.* 2—5-celled, bursting laterally, rarely at the extremity.—Name: *campanula*, a little bell; from the usual form of the corolla.

* *Corolla* campanulate. *Capsule* turbinate, 3—5-celled, opening by lateral clefts below the calyx-segments. *Stigma* 3—5 cleft.

1. *C. pátula* L. (*spreading B.*); stem angular scabrous, leaves roughish dentato-crenate those of the root obovato-lanceolate subpetiolate those of the stem linear-lanceolate, panicles spreading, flowers long-stalked erect, cal.-segments subulate toothed at the base, corolla spreading, capsule erect with the clefts close to the cal.-segments. *E. B.* t. 42.

Pastures and hedges, chiefly confined to the middle and south-eastern counties of England, and even there by no means frequent. ☉. (♂. *Sm.*) 7—9.—Somewhat allied to *C. rotundifolia*, but much taller, with more branched panicles; larger, more spreading and more purple flowers; rough stems and leaves, and toothed or serrate calycine segments.

2. *C. * Rapúnculus* L. (*Rampion B.*); stem somewhat angular hairy below, leaves roughish those of the root obovate-oblong stalked crenate upper ones narrow-lanceolate, panicle erect racemose, cal.-segments subulate entire, limb of the corolla patent, capsule erect with the clefts close to the cal.-segments. *E. B.* t. 283.

In Kent, Surrey, and Norfolk, in a gravelly soil; and in several of the midland counties as far north as Yorkshire. 4. 7, 8.—Taller (2—3 feet high), more erect, and less panieled than the last; *flowers* almost racemed, little spreading at the mouth, more truly campanulate. *Calycine segments* narrow and entire. The Hampshire station often referred to yields only *C. patula*.

3. *C. *persicifolia* L. (*Peach-leaved B.*); glabrous, stem rounded few-flowered, root leaves obovate stalked crenate those of the stem linear-lanceolate subserrate sessile, raceme few-flowered, calycine segments lanceolate entire, corollas spreading, capsule erect with the clefts close to the cal.-segments. *E. B. S. t.* 2773.

Woods near Cullen, Scotland. 4. 7.—*Corolla* large, spreading. In wild specimens, the *flowers* are often solitary upon the stem.

4. *C. rotundifolia* L. (*round-leaved B.*, or *Hairbell*); glabrous, root-leaves subrotundo-cordate crenate (very soon withering) lower cauline ones lanceolate, upper linear entire, flowers solitary or racemose drooping, calyx-segments subulate, capsule drooping with the clefts at the base. *E. B. t.* 866.

Dry and hilly pastures, borders of fields, walls, &c., abundant, sometimes varying with white flowers. 4. 7—9.—*Panicle* few-flowered, lax. *Flowers* drooping. Whole plant slender and graceful.

5. *C. latifolia* L. (*Giant B.*); stem quite simple rounded, leaves ovato-lanceolate acute scabrous doubly serrate lower ones stalked, flowers racemose, peduncles erect single-flowered, calyx glabrous its segments lanceolate acuminate minutely serrate, fruit drooping opening by clefts at the base. *E. B. t.* 302.

Moist shady woods. In Norfolk, Suffolk, Bedfordshire, and Derbyshire, but rare; less unfrequent in the north of England, and very common in woody glens in Scotland. Pretty frequent in Ireland. 4. 7, 8.—*Stem* 2—3 ft. high. *Corolla* very large, blue, often white in the Scottish woods. This is the finest and most stately of our species.

6. *C. *rapunculoïdes* L. (*creeping B.*); stem slightly branched, leaves scabrous unequally erenato-serrate, lower ones cordate long-stalked, upper lanceolate sessile, flowers solitary unilateral drooping axillary forming a leafy raceme, segments of the calyx at length reflexed, capsule drooping with the clefts at the base. *E. B. t.* 1369.

Woods and fields, rare. Oxfordshire. On the magnesian limestone, between Went-bridge and Darlington, Yorkshire. Blair-Athole, Scotland; and in corn-fields 2 miles north-west of Kirkcaldy. 4. 7, 8.—*Rhizome* creeping. *Stem* 2 ft. high. *Leaves* gradually narrower on the upper part of the stem. *Flowers* large. *Cal.-segments* linear lanceolate, entire, rough-edged.

7. *C. Trachélium* L. (*Nettle-leaved B.*); hispid, stem angular, leaves coarsely double-serrate, lower ones cordate long-stalked

upper nearly sessile lanceolate acuminate, peduncles axillary few-flowered, calyx-segments lanceolate erect, capsule drooping with the clefts at the base. *E. B.* t. 12.

Woods in England, frequent. \mathcal{L} . 7—9. — *Leaves* much like those of the nettle, whence its English name. *Flowers* occasionally white in Hampshire.

8. *C. glomeráta* L. (*clustered B.*); stem angular simple nearly smooth, leaves scabrous crenate oblong-lanceolate, root-leaves petiolate those of the stem semiamplexicaul, flowers sessile mostly in a terminal cluster, capsule erect with the clefts at the base. *E. B.* t. 90.

Dry, principally chalky and clay, pastures, in England. Hilly pastures in Scotland; but confined chiefly to the east side, between the Frith of Forth and Montrose. \mathcal{L} . 7, 8. — Varying much in height, from 3 or 4 inches to a foot. *Flowers* rather large, erect. Many slight varieties of this plant are considered to be species by some Continental botanists.

** *Cor. campanulate.* Capsule somewhat globose, partly superior, the free portion opening by 3—5 valves. *Wahlenbergia*.

9. *C. hederácea* L. (*Ivy-leaved B.*); stem weak filiform, leaves all stalked cordate angularly 5-lobed glabrous, peduncles solitary. *E. B.* t. 73. *Wahlenbergia Reich.*

In moist shady woods, in the south of England, and the west of Scotland; Wales, and Ireland. \mathcal{L} . 7, 8. — A most graceful little plant, growing in lax tufts like *Sibthorpia Europæa*. *Peduncles* long, slender, mostly terminal. *Flowers* half an inch or more in length, at first drooping then erect, pale purplish-blue. *Fruit* an almost globose capsule, three fourths adhering to the calyx, opening, not at the sides, but in the upper free part, between the persistent segments of the calyx.

*** *Corolla nearly rotate.* Capsule prismatical, elongated opening by lateral clefts between the cal.-segments. *Specularia*.

10. *C. híbrida* L. (*Corn B.*); stem simple or often branched from the base, leaves oblong crenate wavyed, corolla widely spreading shorter than the calyx-segments, capsule triangular. *E. B.* t. 375. *Specularia A. DC.*

Corn-fields of a dry and chalky nature, chiefly confined to the middle and southern parts of England. Near Gullane, East Lothian; Fifeshire. ☉. 6—9.

2. PHYTEÚMA Linn. Rampion.

Cor. rotate in 5 deep linear segments. *Filaments* dilated at the base; *anthers* distinct. *Stigma* 2—3-cleft. *Caps.* of 2—3 cells, bursting at the side. (*Flowers* in dense bracteated spikes or heads.) — Name: $\phi\upsilon\tau\epsilon\upsilon\mu\alpha$ (the same as $\phi\upsilon\tau\omicron\nu$), the plant;

given *par excellence* to some medicinal plant by the ancients, but which probably bore little or no resemblance to the present.

1. *P. orbiculäre* L. (*round-headed R.*); head of flowers globose, of fruit oval, radical leaves cordato-ovate petiolate erenate lower cauline ones ovate-oblong, upper as well as the bracteas lanceolate, stigmas 3. *E. B.* t. 142.

Chalky soils, to the south of London; but rare. On the downs of Sussex and Hampshire; in Surrey and Kent. 4. 7, 8.—*Stem* 1 foot high. *Root-leaves* numerous, but often withering while the stem is yet in perfection, as is the case with those of *Campanula rotundifolia*; *cauline* ones remote, gradually becoming smaller upwards. *Heads of flowers* of a most beautiful blue colour. The *capsules* too form a curious oval head, with the persistent calyces, each *calyx* spreading in a stellate manner.

2. *P. spicátum* L. (*spiked R.*); head of flowers oblong, of fruit elongated cylindrical, radical leaves cordate-oblong petiolate somewhat doubly serrate, upper ones linear-lanceolate sessile, bracteas linear, stigmas 2. *Borrer* in *E. B. S.* t. 2598.

Woods, thickets, hedges, and fields recently cleared of woods, in several stations about Mayfield, Warbleton, and Waldron, Sussex. 4. 6, 7.—Formerly cultivated, and the *root* eaten as a salad or boiled. Is our plant not an escape from gardens? Much taller than the last species. *Spike of flowers* 2—4 inches long greenish white. Upper part of the *stem* almost bare of *leaves*.

3. JASIÓNE Linn. Sheep's-bit.

Cor. rotate, in 5 deep narrow segments. *Anthers* united at their base. *Stigma* club-shaped. *Caps.* 2-celled, opening at the top by minute teeth. (*Flowers collected into a head, within a many-leaved involucre.*)—Name: *ιασωνη*, a plant used in medicine, supposed by some to be a *Convolvulus*; from *ιασμαι*, to heal.

1. *J. montána* L. (*annual S., or Scabious*); leaves linear waved hispid, peduncles solitary elongated, root annual or biennial. *E. B.* t. 382.

Dry heathy pastures, in a light gravelly or heathy soil. ☉ or ♂. 6—9.—*Stem* 6—10 inches high, branched. *Flowers* bright blue, in terminal, dense, hemispherical heads. *Cal.* small, superior, 5-toothed.

ORD. XLVIII. LOBELIACEÆ Juss.

Calyx-tube cohering more or less with the ovary, 5-lobed, lobes persistent. *Corolla* mostly irregular, 5-lobed; æstivation somewhat valvular. *Stamens* 5, free from the corolla; *anthers* cohering, 2-celled, usually dissimilar, the two lower ones mucronate or bearded, three upper naked or bearded. *Ovary*

1—2-celled. *Style* 1, glabrous, with a ring of hairs below the bifid or simple *stigma*. *Fruit* dry, more or less inferior, the free part usually opening between the dissepiments at the apex by 2 valves, or rarely baccate. *Albumen* fleshy: *embryo* straight. —Herbaceous or suffruticose. Leaves *alternate*, without stipules. —Lactescent and bitter. The genus *Tupa*, and particularly *T. Feuillei* from Chili, is poisonous.

1. LOBÉLIA Linn. Lobelia.

Cor. irregular, 2-lipped, cleft longitudinally on the upper side; upper lip smaller and erect, lower spreading 3-cleft. *Anthers* united, two lower ones bearded at the apex. *Capsule* 2—3-celled, the upper part free 2-valved, loculicidal.—Named in honour of *Matthias Lobel* or *L'Obel*, a Fleming who settled in England, where he published several learned botanical works.

1. *L. úrens* L. (*acrid* L.); leaves toothed nearly glabrous, radical ones obovate petioled, upper ones lanceolate sessile, raceme terminal bracteate, calyx rough. *E. B.* t. 953.

Heathy ground, very rare, near Axminster, Devonshire. *√.* 8, 9. —Milky, and, as its name implies, highly acrid. One foot or more high, with distant leaves and axillary branches. *Flowers* deep-purple, slightly downy externally.

2. *L. Dortmanna* L. (*Water* L.); leaves radical subcylindrical and obtuse of two parallel tubes, stem scarcely leafy, flowers racemed. *E. B.* t. 140.

Lakes in the north and north-west of England, Scotland, and Ireland, especially in the mountainous parts, frequent; often forming a green carpet at the bottom of the water with its densely matted foliage. *√.* 7, 8. —*Root* a small, thick, fleshy stock, from which descend many fibres, and sending forth creeping filiform runners. *Leaves* 2—3 inches long, a little recurved, formed of two parallel tubes or cells. *Scape*, or almost leafless stem, a foot or more high, according to the depth of the water. *Flowers* pale blue, drooping; *fruit* erect.

ORD. XLIX. VACCINIACEÆ De Cand.

Calyx-tube adnate with the *ovary*; the *limb* with from 4—5 more or less distinct lobes or teeth. *Corolla* lobed as the calyx. *Stamens* distinct, free from the corolla, and double the number of its lobes, inserted beneath an epigynous disk. *Anthers* with two cells, opening by 2 pores, and often furnished with two awns. *Ovary* 4—5-celled, 1- or many-seeded. *Style* and *stigma* simple. *Berry* with minute seeds. *Albumen* fleshy.—Shrubs: with *alternate* often coriaceous leaves; chiefly inhabiting mountainous situations or high northern latitudes, slightly tonic and astringent; the fruit esculent. -

1. VACCINIUM Linn. Whortleberry.

Cor. ovate, campanulate or rotate, 4—5-fid. *Berry* globose, 4—5-celled, many-seeded.—Name: some say the *ὑακινθός* of the Greeks, and hence synonymous with *Hyacinthus*; but more probably altered from *baccinia*, denoting a plant with abundance of *baccæ* or *berries*.

* *Cor.* ovate or campanulate.

† *Leaves* deciduous. *Anthers* with 2 dorsal awns.

1. *V. Myrtillus* L. (*Bilberry* or *Whortleberry*); peduncles 1-flowered, leaves ovate serrate glabrous deciduous, stem angular. *E. B.* t. 456.

Woods and heathy places, chiefly in mountainous or alpine districts, abundant. *h.* 4—6.—A small *shrub*, about 1 foot high. *Flowers* drooping, urceolate, almost waxy, greenish with a red tinge. *Anthers* tubular, each cell opening by a pore at the extremity, and having a horn at the back. *Berries* black, glaucous, very agreeable to the taste, and much eaten in the Highlands of Scotland.

2. *V. uliginosum* L. (*great Bilberry* or *Bog Whortleberry*); peduncles 1-flowered, leaves obovate entire glaucous veined beneath deciduous, stems rounded. *E. B.* t. 581.

In mountain bogs, Cumberland and Westmoreland; more frequent in the Highlands of Scotland, ascending even nearly to the summits of the mountains. *h.* 5, 6.—*Leaves* glaucous, especially beneath. *Cor.* ovate, flesh-coloured, smaller than in the last; *anthers* similar. *Berries* black, agreeable, but inferior in flavour to those of *V. Myrtillus*.

†† *Leaves* persistent, evergreen. *Anthers* awnless at the back.

3. *V. Vitis-Idæa* L. (*Red W.* or *Cow-berry*); racemes terminal drooping, flowers campanulate 4-cleft, leaves evergreen obovate dotted beneath, their margins slightly revolute nearly entire. *E. B.* t. 598.

Dry places on heaths, mountains and in woods in the north of England, Wales, Scotland, and Ireland. *h.* 6, 7.—A low, somewhat straggling *shrub*, with leaves resembling those of the *Box*. *Flowers* pale flesh-coloured, open at the mouth, and with deeper and more spreading segments than the two preceding species.

** *Cor.* rotate with reflexed segments. *Leaves* persistent, evergreen. *Anthers* awnless at the back.

4. *V. Oxycoccus* L. (*Marsh W.* or *Cranberry*); peduncles terminal single-flowered, leaves ovate evergreen glaucous beneath, their margins revolute and entire, *cor.* 4-partite revolute, stem filiform. *E. B.* t. 319. *Oxycoccus palustris Pers.*

Peat bogs, especially among *Sphagnum*, in various parts of England, Scotland, and Ireland. *Flowers* of a bright rose-colour. *Cor.* deeply divided, the segments singularly revolute, on which account this species has been by some botanists removed from *Vaccinium*. The fruit is highly agreeable, making the best of tarts.

[*V. macrocarpum* Ait. is found in Loughton Bog, Mold, Flintshire; but it must have been planted there, as it is entirely a North American species.]

SUB-CLASS III. COROLLIFLORÆ. (ORD. L.—LXVIII.)

Corolla monopetalous, hypogynous (inserted upon the receptacle, at the base of the ovary, which is thus free, not adnate with the calyx).

CONSPECTUS OF THE ORDERS.

A. Stamens free from the corolla, distinct.

- 50. ERICACEÆ. Style 1. Cor. petaloid: petals firmly cohering. Stam. 8—10. Seed-coat close to the nucleus. Plants shrubby.
- 51. PYROLACEÆ. Style 1. Cor. petaloid: petals very slightly cohering at the base, easily separated. Stam. 10. Seed-coat chaffy. Plants herbaceous.
- 68. PLANTAGINACEÆ. Style 1. Cor. membranaceous. Stamens 4. (Flowers monœcious.)

B. Stamens inserted upon the corolla, distinct or monadelphous at the base or with anthers united.

* Carpels and styles several, distinct.

[36. CRASSULACEÆ.]

** Style basilar. Ovary 4-partite. Albumen 0, or in small quantity.

- 59. BORAGINACEÆ. Flowers usually regular. Stamens 5. Leaves alternate.
- 63. LABIATÆ. Flowers usually irregular. Stamens 2—4. Leaves opposite.

*** Cor. scarious. Style terminal. Ovary entire.

- 68. PLANTAGINACEÆ. Cor. tubular; limb equal, 4-partite. Stamens 4, very long.

**** Cor. coloured (petaloid). Style terminal. Ovary entire, 1-celled.

- 67. PLUMBAGINACEÆ. Calyx tubular. Styles 5. Ovule solitary.
- [33. PORTULACACEÆ. Sepals 2, distinct. Styles 3. Ovules 3.]
- 66. PRIMULACEÆ. Cor. regular. Stamens opposite the lobes of the cor. and as many, equal. Style 1.
- 65. LENTIBULARIACEÆ. Cor. irregular. Stam. 2. Style 1. Ovary with a free central placenta.
- 62. SCROPHULARIACEÆ. Cor. nearly regular. Stam. 4, fewer than the lobes of the cor., and alternating. Style 1. Placentas axile.
- 61. OROBANCHACEÆ. Cor. irregular. Stam. 4, didynamous. Style 1. Placentas parietal.
- 56. GENTIANACEÆ. Cor. regular. Stam. alternate with the lobes of the

cor., and as many. Style 1—2. Placentas parietal. Seeds very numerous.

58. CONVULVULACEÆ. Cor. regular. Stam. alternate with the lobes of the cor., and as many. Style 1. Placentas basilar. Seeds very few.

**** Cor. coloured. Stam. distinct. Style terminal. Ovary entire or slightly 2-lobed, with two or more cells.

† Ovules solitary in each cell, or in pairs and collateral.

58. CONVULVULACEÆ. Cor. regular, 4—5-lobed. Stam. 4—5. Style or styles evident. Leaves alternate or none.
 53. AQUIFOLIACEÆ. Cor. regular, 4—6-partite. Stam. 4—6. Stigmas sessile.
 54. OLEACEÆ. Cor. regular, valvate in æstivation. Stam. 2. Leaves opposite.
 64. VERBENACEÆ. Cor. slightly irregular, with a cylindrical tube and 5-cleft limb, imbricated in æstivation. Stam. 4. Leaves opposite.

†† Ovules in pairs in each cell and superposed, or more than 2.

57. POLEMONIACEÆ. Cor. regular. Stigmas 3. Ovary and capsule 3-celled.
 55. APOCYNACEÆ. Cor. regular, twisted in æstivation. Stam. as many as the lobes of the cor. Stigma 1, constricted in the middle. Fruit of 2 follicles.
 56. GENTIANACEÆ. Cor. regular, twisted in æstivation. Stam. as many as the lobes of the cor. Stigmas 1—2, without a constriction. Fruit imperfectly 2-celled, not follicular. Leaves opposite.
 60. SOLANACEÆ. Cor. with 5 lobes and stamens. Fruit 2- (or spuriously 4-) celled. Seeds more or less peritropal. Embryo heterotropal. Leaves alternate. Flowers usually extra-axillary.
 62. SCROPHULARIACEÆ. Stamens usually fewer than the lobes of the cor. Fruit 2-celled. Seeds ascending. Embryo homotropal.

[C. Stamens inserted upon the corolla, 8, diadelphous.

11. POLYGALACEÆ. Cor. irregular, coloured. Style 1, terminal. Ovules solitary in each cell.]

A. STAMENS FREE FROM THE COROLLA. (ORD. L.—LII)

ORD. L. ERICACEÆ Juss.

Calyx of 4 or 5 divisions, persistent. *Corolla* of 4 or 5 divisions regular or irregular almost hypogynous, marcescent or deciduous. *Stam.* 8—10. *Anthers* 2-celled, the cells separating at the apex or the base, opening by pores or rarely by a longitudinal fissure, often appendaged. *Ovary* seated upon a hypogynous disk, with 4 or more cells. *Style* 1. *Stigma* 1, often lobed. *Fruit* a capsule, several-celled, with an axile *placenta*, 5- or many-seeded. *Seeds* with the outer coat of the same form as and close-pressed to the nucleus. *Albumen* fleshy. — Shrubs with opposite or whorled, mostly evergreen and rigid

leaves, *without* stipules.—Many are astringent and diuretic, some poisonous, as *Rhododendron* and *Kalmia*.

* *Corolla marcescent. Fruit dry, capsular.*

1. *ERICA*. Calyx simple. Capsule loculicidal, dissepiments adhering to the valves.
2. *CALLUNA*. Calyx double (surrounded by 4 coloured bracteas similar to the calyx). Caps. septicidal, dissepiments detached from the valves.

** *Corolla deciduous. Fruit dry, capsular.*

3. *MENZIESIA*. Cor. ventricose. Stam. 8—10. Caps. 4—5-celled, septicidal; valves entire.
4. *AZALEA*. Corolla campanulate. Stam. 5. Caps. 2—3-celled, septicidal; valves bifid.
5. *ANDROMEDA*. Cor. ovate or campanulate. Stam. 8—10. Caps. loculicidal.

*** *Cor. deciduous. Fruit fleshy, indehiscent.*

6. *ARBUTUS*. Cells of berry many-seeded.
7. *ARCTOSTAPHYLOS*. Cells of berry 1-seeded.

1. *ERICA* Linn. Heath.

Cal. of 4 leaves. *Cor.* campanulate or ovate, often ventricose, marcescent. *Capsule* 4-celled, 4-valved, loculicidal, dissepiments adhering to the middle of the valves.—Named from *ερεικω*, to *break*, because it was formerly supposed to have the power of destroying calculi in the bladder.

* *Mouth of the corolla oblique. Anthers included, or nearly so.*

1. *E. ciliáris* L. (*ciliate* H.); anthers without awns bifid included, corolla ovate inflated, leaves ovate 4 in a whorl ciliatoglandulose, flowers in terminal unilateral racemes, ovary glabrous. *E. B. S.* t. 2618.

Near Truro and Penryn, frequent, and on the north coast of Cornwall; near Corfe Castle, Dorset; near Clifden, Galway, Ireland. *h.* 6, 7.—The *flowers* are as large as those of *Menziesia carulea*, and more highly coloured; while the *leaves* are elegantly fringed with hairs, and each hair is tipped with a gland. Growing along with this and *E. Tetralix*, Mr. H. Watson finds at Truro a hybrid between them, having sometimes the *cor.* and the *racemes* of the present species, with the leaves, pubescent ovary, and awned anthers of the next, but varying in these respects.

** *Mouth of corolla straight. Anthers included, or nearly so, awned at the base.*

2. *E. Tétralix* L. (*Cross-leaved* H.); anthers with two acute awns at the base included, corolla ovate as long as the style, leaves 4 in a whorl linear revolute at the margin ciliate, flowers

umbellato-capitate, pedicels hoary, ovary pubescent. *E. B.* t. 1014.

Heaths and moory ground, abundant. *h.* 7, 8.—*Flowers* rose-coloured, sometimes white, drooping; they have been found cleft into several divisions, and with the stamens turned into petaloid segments. The species varies much as to the number of ciliæ on the leaves and calyx, and occasionally loses them entirely.

3. *E. Mackáyi* Hook.: Bab. (*Mackay's H.*); anthers with 2 acute awns at the base included, corolla ovate a little shorter than the style, leaves 4 in a whorl ovate ciliate glabrous above almost white beneath, flowers umbellato-capitate, pedicels nearly glabrous, ovary glabrous. *E. Mackaiana* Bab.: *E.B.S.* t. 2900.

Between Roundstone and Clifden, Connemara, Ireland. *h.* 8, 9.—This was first found in Ireland by Mr. Wm. MacCalla and Mr. Ogilby, and distinguished by Dr. Mackay, and in the same year it was discovered on the Sierra del Peral, in Asturia by M. Durieu. The specific names, *Mackáyi* or *Mackaii* (Hook.) and *Mackaiana* (Bab.), are in this case all correct according to botanical rules, and differ merely in termination: both Sir William Hooker and Mr. Babington had agreed to dedicate this heath to Dr. Mackay, and although the one appellation was published shortly before the other, we have conjoined their names as the authority for the species. The broad, almost exactly ovate, leaves with a great proportion of nearly white surface beneath, would seem, at first sight, to distinguish this specifically from the preceding; to which may be added, according to Mr. Babington, that the upper surface of the leaves and their midrib beneath are always glabrous, while these parts are downy in *E. Tetralix*. Perhaps however it may prove, by cultivation, to be only a more glabrous form, with larger foliage.

4. *E. cinérea* L. (*fine-leaved H.*); anthers with two serrate appendages at the base included, style a little exserted, corolla ovate, leaves ternate linear keeled acute glabrous shining, flowers in dense whorled racemes, ovary glabrous. *E. B.* t. 1015.

Heaths, abundant. *h.* 7—9.—*Flowers* drooping, reddish-purple. *Leaves* usually with fascicles of small leaves in their axils. The plant is used for various economical purposes: its flowers are sometimes white.

*** *Mouth of the corolla straight. Anthers protruded, bipartite, awnless.*

5. *E. vágans* L. (*Cornish H.*); anthers without awns deeply bifid and as well as the style exserted, corolla campanulate, leaves 3—4 in a whorl, flowers axillary crowded, ovary glabrous. *E. B.* t. 3. *E. multiflora* Huds. (not L.)

On heaths in Cornwall, chiefly in the Lizard. Islet on the coast of Waterford, near Tramore, Ireland. *h.* 7, 8.—Well distinguished from all our British *Ericæ* by its campanulate, not ovate, corolla.

6. *E. Mediterránea* L. (*Mediterranean H.*); anthers without awns deeply bifid and as well as the style exserted, corolla narrow urceolate, bracteas above the middle of the peduncle, calyx coloured, flowers in leafy racemes, leaves 4 in a whorl linear glabrous flat above convex with a central furrow beneath, ovary glabrous.— β . *Hibernica*, flowering branches and style shorter. *Hook. in E. B. S. t. 2774*.

β . Mountain-bogs in the west of Mayo and Galway, Ireland. *h.* 4. — The Irish plant seems intermediate between the *E. Mediterranea* of Bot. Mag and *E. carnea*: the stem is sometimes 2—5 ft. high, with numerous upright rigid branches, as in *E. Mediterranea*, sometimes only 4—8 inches high with spreading branches. Mr. Bentham, indeed, unites them all under *E. carnea*.

2. CALLÚNA *Salisb. Ling.*

Cal. of 4 coloured leaves, concealing the *cor.*, accompanied by 4 *bracteas*, resembling an outer calyx. *Cor.* campanulate, marcescent. *Stam.* 8. *Caps.* 4-celled, 4-valved, septicidal and septifragal (*valves* opening at the dissepiments which separate from them and adhere to the axis of the fruit). — Named from *καλλυνω*, to *cleanse* or *adorn*; and hence peculiarly applicable, as Sir J. E. Smith observes, to this plant, whether we consider the beauty of its flowers, or the circumstance of brooms being made of its twigs.

1. *C. vulgáris* *Salisb. (common L.)*. *Erica* L.: *E. B. t. 1013*.

Heaths and moors, common; sometimes with white fl. *h.* 6—8. — A low, much-branching, tufted *shrub*. *Leaves* small, opposite, with two small decurrent spurs at the base, more or less pubescent, and even hoary in β . of *Sm.* (the *E. ciliaris* Huds. not Linn.), closely imbricated in 4 rows. *Flowers* small, reddish, drooping, nearly sessile, ovate. A plant much employed for brooms and for fuel. It makes excellent edging to garden-plots, and bears clipping as well as *box*.

3. MENZIÉSIA *Sm. Menziesia*.¹

Cal. cleft to the base into 4—5 deep segments, or 4-lobed. *Cor.* ventricose, deciduous. *Stam.* 8—10. *Capsule* 4—5-celled, septicidal (the dissepiments formed by the inflexed margins of the entire valves, and opening between these dissepiments). — Name: “*Nomen dedi*,” says the learned founder of this genus, “in honorem *Archibaldi Menzies* Scotici, peregrinatoris et botanici indefessi, prisæ fidei ac urbanitatis viri.”

¹ This genus is by some divided into three: — 1. *Phyllodoce* Sal. *Cal.* deeply 5-cleft. Filaments longer than the anthers. Stigma peltate, with 5 tubercles. Seeds oblong compressed. — 2. *Dabeocia* Don. *Cal.* deeply 4-cleft. Filaments shorter than the anthers. Stigma truncate. Seeds ovate. — 3. *Menziesia* Sm. Calyx 4-lobed. Filaments longer than the anthers. Stigmas obtuse. Seeds scobiform. The first two are evergreen: the last has deciduous leaves, and is a native only of America; it is no doubt the original species of the genus, but Smith afterwards changed the character so as to exclude it, and include the European ones.

1. *M. cærúlea* Sw. (*Scottish M.*); leaves scattered numerous linear toothed, flower-stalks terminal aggregate simple, flowers 5-cleft decandrous. *E. B.* t. 2469. *Phyllodoce taxifolia* Sal.

Heathy moor on the "Sow of Athol," at Dalnaspidal, Perthshire. *h.* 6, 7.—A small *shrub*; stems branched, woody and naked below. *Peduncles* 2 inches long, glandular, reddish. *Flowers* large, beautiful purple-blue. *Cor.* urceolate.—This plant is far more common in North America than in Scotland. It scarcely yields in beauty to the following species.

2. *M. polifólia* Juss. (*Irish M.*, or *St. Dabeoc's Heath*); leaves ovate the margins revolute white and downy beneath, flowers 4-cleft octandrous in terminal leafy racemes. *Erica Dabeoci* L.: *E. B.* t. 35. *Dabeocia polifolia* Don.

Mountainous heaths in Ireland. Croagh Patrick, county Mayo. Abundant in Connemara. Sometimes with pure white fl. *h.* 6—8.

4. AZÁLEA Linn. Azalea.

Cal. 5-partite. *Cor.* shortly campanulate, regular, deciduous. *Stam.* 5, straight, inserted at the base of the *cor.* *Anthers* bursting longitudinally. *Caps.* 2—3-valved, 2—3-celled; dissepiment formed by the inflexed margins of the bifid valves. *Seeds* attached to a central, at length free, receptacle.—Named from *αζαλεος*, *parched, arid*; because in such places the plant grows.

1. *A. procúmbens* L. (*trailing A.*): *E. B.* t. 865. *Chamæledon* Link. *Loiseleuria Desvux.*

Dry moory ground, on most of the Scottish Highland mountains, among grass and moss; especially abundant in the north, and nowhere perhaps more plentiful than on the Cairngorm range, where it forms large dark green patches. *h.* 5, 6.—A low *shrub*, with very woody tortuous stems, and crowded leafy branches. This is the only species, among all those often placed in the genus, to which the name *Azalea* is applicable.

5. ANDRÓMEDA Linn. Andromeda.

Cal. deeply 4—5-cleft. *Cor.* ovate or campanulate, deciduous. *Stam.* 8—10. *Anthers.* with awns. *Caps.* 4—5-celled, loculicidal, the dissepiments from the middle of the valves.—Named in allusion to the fable of *Andromeda*, whose condition, chained to a rock and exposed to the attack of a sea-monster, was considered analogous to that of this beautiful tribe of plants, growing on "turfy hillocks in the midst of swamps" frequented "by toads and other reptiles." *Linn. Lach. Lap.* p. 188.

1. *A. polifólia* L. (*Marsh A.*); leaves alternate lanceolate their margins revolute glaucous beneath, flowers in short terminal racemes. *E. B.* t. 713.

Peat-bogs. Larlingford, Norfolk; north of England. Lowlands of Scotland. Queen's county and Kerry, Ireland. *h.* 5—9. — A small evergreen *shrub*, with beautiful oval or urceolate, rose-coloured, drooping *flowers*, a good deal concealed among the terminal *leaves*.

6. *ARBUTUS* Linn. Strawberry-tree.

Cal. deeply 5-cleft. *Cor.* ovate, deciduous. *Stam.* 10. *Fruit* fleshy, usually warted, 5-celled; cells many-seeded. — Named, according to Théis, from *ar*, rough or austere, and *boise*, a bush, in Celtic.

1. *A. U'nedo* L. (*austere* S.); stem arboreous, leaves elliptic-lanceolate serrate, panicles terminal, fruit tubercled. *E. B.* t. 2377.

About the Lakes of Killarney, in woods at Muckruss, and at Glengariff near Bantry, Ireland, where it adds greatly to the charms of the scenery. *h.* 9, 10. — The fruit ripens the following summer. Apparently truly wild in the south of Ireland; though some are of opinion that it was introduced by the monks of Muckruss Abbey. The young *leaves* are clothed with glandular hairs. The *flowers* are large, pale, greenish-white. *Fruit* red.

7. *ARCTOSTAPHYLOS* Adans. Bear-berry.

Cal. deeply 5-cleft. *Cor.* ovate, deciduous. *Stam.* 10. *Fruit* fleshy, smooth, 5-celled; cells 1-seeded. — Name: from *αρκτος*, a bear, and *σταφυλη*, a grape; in allusion to the common name of the fruit.

1. *A. alpina* Spreng. (*black* B.); stem procumbent, leaves wrinkled serrate marcescent, racemes terminal. *Arbutus* L.: *E. B.* t. 2030.

Dry barren grounds, on many of the Highland mountains, particularly in the extreme north. Ben Nevis, near the lake; and in Sutherland; Hoy hill, Orkney. *h.* 5. — A trailing *shrub*, with obovate, marcescent *leaves* which taper down into a footstalk, and assume, in autumn, a fine red colour. There are a few hairs on the leaf-stalks, and ciliate *bracteas* at the base of the flower-stalks. *Corollas* urceolate, very pale rose-colour, almost white. *Berry* black.

2. *A. Uva-ursi* Spreng. (*red* B.); stems procumbent, leaves obovate entire evergreen, racemes terminal. *Arbutus* L.: *E. B.* t. 714.

North of England and Ireland; abundant in the Highlands and Western Isles of Scotland, growing in dry heathy and rocky places. *h.* 5, 6. — *Stems* very strong and trailing; *leaves* obovate, stiff, rigid, glabrous, their margins revolute. *Flowers* in small crowded terminal *racemes*, of a beautiful rose-colour. *Berry* small, red, mealy, austere, yielding excellent food for the moor-fowl.

ORD. LI. PYROLACEÆ *Lindl.*

Calyx 5-partite, persistent. *Petals* 5, free or slightly united at the base, regular, deciduous. *Stamens* 10, placed in pairs opposite the petals: *anthers* 2-celled, inverted, opening by pores. *Ovary* without a conspicuous hypogynous disk, 5-celled, many-seeded. *Style* single. *Stigma* rayed or orbicular, generally lobed. *Capsule* 5-celled, 5-valved, loculicidal. *Seeds* chaffy, numerous. *Albumen* fleshy, with the minute *embryo* at its base. — Herbaceous or somewhat shrubby.—*Chimaphila* of North America is a powerful diuretic.

1. MONESES. Cor. 5-partite. Stigma 5-partite.
2. PYROLA. Petals 5. Stigma 5-lobed.

1. MONESES *Sal.* Moncses.

Petals slightly connected at the base. *Filaments* subulate; *anthers* with two tubular pores. *Stigma* 5-parted. Margins of the *valves* of the *capsule* without any web. — Name from *μονος*, one, or alone; on account of the solitary flowers, and combined petals.

1. *M. grandiflora* *Sal.* (large-flowered *M.*). *Pyrola uniflora* *L.*: *E. B.* t. 146.

Woods in Scotland, rare. Fir-wood near Brodie House, Forres. Woods at Scone. Coul, Ross-shire. In the Oak-wood, Knock of Alves, near Elgin. 4. 7.—*Stem* scarcely any, bearing a few orbicular, petiolate, and obscurely serrate leaves, and a single peduncle, with one large, nearly white, very fragrant flower. *Style* short, straight. *Stigma* large, with 5 erect rays.

2. PYROLA *Linn.* Winter-green.

Petals 5, distinct. *Filaments* subulate; *anther-cells* usually truncate and opening by a pore at the base, rarely with two tubular pores. *Stigma* 5-lobed. Margins of the *valves* of the *capsule* connected by a web.—Named from *pyrus*, a pear-tree; from a fancied resemblance in their flowers.

1. *P. secunda* *L.* (serrate *W.*); flowers racemose all leaning one way, leaves ovate serrate. *E. B.* t. 517.

Rare in the north of England; near Keswick, Cumberland. Not unfrequent in fir-woods in Scotland, especially in the Highlands. 4. 7.—*Stems* rather straggling, branched. *Peduncles* 4—5 inches high, with several oval scales or bractes. *Flowers* small, greenish-white. *Petals* erect. *Style* much protruded. *Stigma* 5-lobed, without projecting points.

2. *P. rotundifolia* *L.* (round-leaved *W.*); flowers drooping. racemose, leaves obovate-rotundate slightly crenate, style bent

down curved upwards at the extremity, much longer than the ascending stamens — *α*. scape with a few scattered scaly bractes. *E. B.* t. 213. — *β*. *bracteata*; leaves smaller, scape scaly throughout its whole length. *P. maritima* *Ken.* in *Phytol.* ii. p. 727.

Moist woods and bushy places, rare. Bradwell, Theberton, and Middleton, Suffolk; Larlingford, Norfolk; Hawthorn Dean and in Castle-Eden Dean, Durham; near Helmsley and Hackness, Yorkshire; Allerton Dean, Northumberland. Guernsey, among tall reeds near the sea. Gannachy Wood, Glenclova, and Sidlaw Hills, Forfarshire; Auchindenny woods near Edinburgh. — *β*. Sands near Lytham, Lancashire: *Mr. Kenyon.* 24. 7–9. — The largest of the *Pyrolæ*, with white, spreading flowers: well distinguished by the direction and relative length of its *stamens* and *style*. The latter is more than twice as long as the fully formed *capsule*, and is singularly curved. *Stigma* with 5 erect points.

3. *P. média* Swartz (*intermediate* *W.*); leaves ovato-rotundate crenate, stamens erect much shorter than the straight or slightly decurved style, stigma with 5 erect points. *E. B.* t. 1945.

Woods, principally in the north; Keswick, Cumberland; Rugley wood, Northumberland; Durham; York; Worcestershire; St. Leonard's Forest, Sussex; also said to grow in Oxford, Bucks, Warwick, and Lancashire. Not very general in Scotland. County of Antrim, &c., Ireland. 24. 7, 8. — *Style* protruded beyond the flower, nearly straight.

4. *P. minor* L. (*lesser Winter-green*); leaves ovate-rotundate crenate, stamens erect as long as the very short straight style which is included within the flower, stigma large with 5 divergent rays. *E. B.* t. 158 (not good); *Hook.* in *Fl. Lond.* t. 154. *P. rosea* *E. B.* t. 2543.

Woods in the north of England and Scotland; frequent in the Western Highlands and Hebrides. 24. 6, 7. — Smaller than the last, essentially distinguished from it, and at once characterised by the shortness of its *style* and large radiated *stigma*, quite included within the concave *corolla*.

ORD. LII. MONOTROPACEÆ Nutt.

Cal. 5-partite or 5-sepaled, persistent. *Cor.* regular, gamopetalous, ovate or campanulate, or wanting. *Stamens* 8–10, sometimes alternating with as many recurved glands; *anthers* sometimes opening transversely, sometimes parallel-celled with bristles at the base, never opening by pores at the base or apex. *Ovary* without a conspicuous entire hypogynous disk, 4–5-celled, many-seeded. *Style* single. *Stigma* discoid, somewhat margined. *Capsule* 5-celled, 5-valved, loculicidal. *Seeds* numerous, chaffy or winged at one end. *Embryo* minute, in the

apex of the fleshy *albumen*.—Herbaceous, growing among the roots of Pines and other trees; stems brown or almost colourless, leafless, but covered with scales.

1. *MONÓTropa* Linn. Bird's Nest.

Perianth of 4—5 leaves, cucullate at the base, with or without as many external alternating scales or *bracteas* (*calyx* DC.¹). *Anthers* 1-celled, 2-lipped. *Seeds* chaffy.—Named from *μονος*, one, and *τρεπω* to turn; the flowers all pointing one way.

1. *M. Hypopitys* L. (*yellow B.*); flowers racemose glabrous externally, lateral ones with 8 stamens, terminal one with 10, leaves of the perianth with as many glabrous alternating external scales. *E. B.* t. 69. — *α.* filaments, ovary, style, and inside of perianth glabrous. — *β.* filaments, ovary, style, and inside of perianth hairy.

Beech and fir-woods, where the soil is dry; but not common either in England or Scotland. In Sussex, occurring in rings several feet in diameter. Counties of Dublin and Louth, Ireland. 4. 7, 8. — *Root* parasitic? *Stem* stout, erect, 6—9 inches high, simple or slightly branched, instead of leaves having numerous ovate scattered scales, of the same dingy yellow hue as the stem. *Raceme* terminal, a continuation of the stem, at first drooping, then erect. *Flowers* on short scaly or bracteated *pedicels*, large, of the same colour as the rest of the plant. *Stamens* alternately smaller. *Seeds* very minute, rarely perfect; the outer coat loose, reticulated, and much longer than the nucleus.

B. STAMENS INSERTED UPON THE COROLLA. (ORD. LIII.—
LXVIII.)

ORD. LIII. AQUIFOLIACEÆ De Cand.

Cal. of 4—6 imbricated lobes. *Corolla* 4—6-lobed, æstivation imbricative. *Stamens* 4—6, alternate with the segments of the corolla. *Ovary* with from 2—6 or more cells. *Ovules* solitary, pendulous from a cup-shaped *seed-stalk*. *Stigmas* several or lobed, nearly sessile. *Fruit* fleshy, with from 2—6 or more stony 1-seeded *nuts*. *Albumen* fleshy.—Trees or shrubs. Leaves coriaceous. Flowers small, axillary.—The bark and fruit are tonic and astringent. The famous *Paraguay tea* of South America is a species of *holly*, *Ilex Paraguensis*.

¹ De Candolle, Lindley, and most botanists, call the perianth a *corolla*, and the bracteas a *calyx*; but in *M. Morisoniana* and *uniflora* the latter is absent entirely: and as it is now universally admitted that a corolla may be absent when there is a calyx, but that a calyx or perianth cannot be absent when the corolla is developed, we prefer adhering to the character of the order and genus given in former editions of this Flora.

1. *I'LEX* Linn. Holly.

Cal. 4—5-toothed. *Cor.* rotate, 4—5-cleft. *Stigmas* 4, sessile. *Fruit* spherical, including 4 *nuts*. (Some flowers destitute of pistil.)—Name supposed to be the same as *Ulex*, which see; or perhaps a corruption of *illex*, *enticing* or *alluring*, in allusion either to the birdlime made of the bark, or to the fruit.

1. *I. Aquifolium* L. (*common II.*); leaves ovate acute shining waved with spinous teeth, peduncles axillary short many-flowered, flowers subumbellate. *E. B.* t. 496.

Frequent in hedges and woods, especially in a light or gravelly soil. *h.* 5—8. — A small evergreen tree of great beauty, with smooth grayish bark. Leaves alternate, deep shining green, very rigid, the upper ones quite entire, the lower ones generally edged with strong sharp spines, a difference in the foliage which has not escaped the notice of poets. *Fruit* bright scarlet, sometimes yellow.

ORD. LIV. OLEACEÆ R. Brown.

Calyx divided, toothed, persistent, sometimes 0. *Corolla* 4-cleft, valvate in æstivation, occasionally 0. *Stamens* 2. *Ovary* without any hypogynous disk, 2-celled, cells 2-seeded: *ovules* collateral, pendulous. *Style* 1 or 0: *stigmas* 1 or 2. *Fruit* a berry, drupe, or capsule, separable in two. *Seeds* with or without *albumen*. — Trees or shrubs. Leaves *opposite*, without stipules, *simple* or *compound*. — Olive oil is the expressed juice of the pericarp (not of the seed) of *Olea Europæa*. *Manna* is the concrete juice of *Fraxinus rotundifolia* and other species of *ash*. The *Jasmines* yield a deliciously fragrant oil, and belong to the very closely allied order of *Jasminaceæ*, chiefly distinguished by the erect ovules, unsymmetrical flowers, and corolla imbricated in æstivation,

1. *LIGUSTRUM*. Fruit fleshy.

2. *FRAXINUS*. Fruit dry, winged at the extremity.

1. *LIGUSTRUM* Linn. Privet.

Cal. 4-cleft. *Cor.* 4-cleft. *Berry* 2-celled, with the cells 1—2-seeded. — Named from *ligo*, to *bind*; on account of the use sometimes made of its long and pliant branches.

1. *L. vulgäre* L. (*Privet*); leaves elliptic-lanceolate, panicle compact. *E. B.* t. 764.

Thickets, and more frequently in hedges. *h.* 6, 7. — A bush, with opposite evergreen leaves, frequently used for fences, as the plant bears clipping. *Flowers* small, white. *Berries* black, globose.

2. *FRAXINUS* Linn. Ash.

Cal. 0, or 4-cleft. *Cor.* 0, or of 4 petals. *Fruit* dry, inde-

hiscent, 2-celled, 2-seeded, compressed and foliaceous at the extremity (a *samara*). *Seeds* solitary. (Flowers sometimes without stamens). — Named from *σπαρίς*, a *separation*; in allusion to the facility with which the wood may be split.

1. *F. excelsior* L. (*common A.*); leaves usually pinnate, leaflets ovato-lanceolate, acuminate serrate, flowers without either calyx or corolla. — *α.* leaves all pinnate. *E. B.* t. 1692. — *β.* *heterophylla* (*simple-leaved A.*); leaves simple and pinnate. *F. heterophylla* Vahl: *E. B.* t. 2476.

Woods and hedges throughout the country. — *β.* Rare in England; Devonshire. *h.* 4, 5. — One of the noblest of our trees, remarkable in old individuals for the curving upwards of the extremities of the lower pendent branches. The *F. heterophylla* may be considered a sort of monstrosity, often with the leaflets united so as to form one single leaf. — The *flowers* are very simple, and appear before the leaves. There is no *calyx* or *corolla*. The *pistil* and *stamens*, often one of each, are sometimes separate, and rise at once from the extremity of the flower-stalk.

ORD. LV. APOCYNACEÆ Juss.

Calyx of 5 persistent divisions. *Corolla* regular, 5-lobed, deciduous; *æstivation* twisted. *Stamens* 5. *Anthers* 2-celled. *Ovaries* 2, each 1-celled, or 1 with 2 cells. *Styles* 2—1. *Stigma* 1, capitate, contracted in the middle (like an hour-glass). *Fruit* a *follicle*, *capsule*, *drupe*, or *berry*. *Seed* albuminose. — Trees or shrubs, often *milky*; leaves *opposite*, without stipules. — An Order almost intermediate between *Gentianaceæ* and *Rubiaceæ*, containing acrid and powerful principles. The famous *tanghin* poison of Madagascar (see *Botanical Miscellany*, vol. iii. p. 110, and *Botanical Magazine*, tab. 2968) is the seed of *Tanghinia venenifera*. The root of the *Oleander* is poisonous, while the nearly allied *Tabernæmontana*, or *Hya-Hya* of British Guiana, is the milk-tree of that country, and yields a nutritive fluid like cream. *Urceola elastica* affords *caoutchouc*. *Vinca minor* is bitter and astringent.

1. *VINCA* Linn. Periwinkle.

Cal. 5-partite. *Cor.* salver-shaped, the segments oblique. *Follicles* 2, erect. *Seeds* naked (destitute of seed-down). — Name: supposed from *vincio*, to *bind*; which the trailing stems do to those plants which grow in its neighbourhood.

1. *V. minor* L. (*lesser P.*); stems procumbent, leaves oblong-lanceolate, their margins as well as the small lanceolate teeth of the calyx glabrous. *E. B.* t. 917.

Hedges, and banks in woods. Devon, Hants, and perhaps most of

the southern counties. 2. 4—6.—Trailing stems very tough; not so in the following species.

2. V. * *máior* L. (*greater P.*); stems at first suberect, leaves ovate or cordate, their margins as well as those of the elongated subulate segments of the calyx ciliate. *E. B. t.* 514.

Woods and thickets. 2. 4, 5.—Twice the size of the former in all its parts. *Corolla* usually purple in both, but varying in intensity. The *anthers*, *stigma*, and *fruit* (a *follicle*) of this genus are highly curious.

ORD. LVI. GENTIANACEÆ *Juss.*

Calyx divided, persistent. *Corolla* usually regular and persistent, the limb generally with an imbricative and twisted rarely with an induplicate æstivation, 4- mostly 5-, 6-, 8-, or 10-lobed. *Stamens* as many as lobes of the corolla. *Ovary* 1—2-celled, many-seeded. *Styles* 1 or 2. *Stigmas* 1—2. *Capsule* (or *Berry*) generally 2-valved; the margins of the valves turned inwards and bearing the *seeds*, where there is one cell; in the 2-celled genera the margins meet in the axis. *Albumen* fleshy. — *Mostly* herbaceous, generally glabrous plants, with *opposite* (rarely *alternate*) leaves and *no* stipules, *eminently bitter and stomachic*. — *Gentiana lutea* is the *bitter gentian*, and affords a spirit much used in Switzerland and well known under the name of *Enzian-wasser*: *Swertia* (or *Ophelia*) *Chirayta* is a famous East-Indian stomachic.

A. *Leaves opposite. Corolla twisted in æstivation.*

* *Style deciduous.*

4. CHLORA. Cor. rotate. Stamens 8.
1. CICENDIA. Cor. funnel-shaped. Stam. 4. Anth. straight. Stigma 1, entire.
2. ERYTHRÆA. Cor. funnel-shaped. Stam. 5. Anth. twisted. Stigmas 2.

** *Style persistent.*

3. GENTIANA. Cor. without nectariferous pores. Cal. 4—5-cleft.
- 3^a. SWERTIA. Cor. rotate, with nectariferous pores. Cal. 4—5-partite.

B. *Leaves alternate. Corolla induplicate in æstivation.*

5. MENYANTHES. Cor. fleshy, hairy withiu. Caps. with 2 valves bearing the seeds along their middle. Leaves ternate.
6. VILLARSIA. Cor. thin, ciliate. Capsule without regular valves. Leaves floating, cordate.

A. *Segments of the corolla twisted in æstivation. Leaves opposite.*
(Gen. 1—4.)

1. CICÉNDIA *Adans.* Cicendia.

Cal. 4-cleft. *Cor.* 4-cleft, funnel-shaped, marcescent, the

tube swelling. *Stam.* 4. *Anthers* opening longitudinally. *Style* 1, deciduous. *Stigma* entire. *Caps.* 1-celled, 2-valved. *Seeds* attached to 2 sutural receptacles, which at length separate by the opening of the 2-valved capsule.—A name of Adanson's, the etymology of which is no where explained; perhaps derived from *κικίρυος* *curled hair*, on account of the slender entangled stems and branches.

1. *C. filiformis* Reich. (*least C.*); leaves linear-lanceolate sessile, stem dichotomous slender, peduncles elongated, calyx campanulate with ovate acute lobes. *Exacum Sm.*: *E. B. t.* 235. *Gentiana L.* *Microcala Griseb.*

Sandy turf-bogs, in the extreme south and south-west of England; also in Pembrokeshire. In Ireland, is found near Cork, upon Dursey Island, and at Glengariff. ☉. 7—10.—A small, slender, and graceful plant, with yellow *flowers*, differing from *Gentiana* in the number of *stamens* and divisions of the *cal.* and *corolla*.

[*C. Candollei* Griseb., distinguished by the calyx 4-partite, the segments linear and adpressed, is said to have been found at Paradis in Guernsey; Mr. Bentham however refers the Guernsey plant to *C. pusilla* Griseb.; which chiefly differs by the cal.-segments patulous: but we have seen no specimens.]

2. ERYTHRÆA *Renealm.* Centaury.

Cal. 5-cleft. *Cor.* funnel-shaped, withering, its *limb* short. *Anthers* at length spirally twisted. *Style* 1, deciduous. *Stigmas* 2. *Caps.* linear, 2-celled.—Named from *ερυθρος*, *red*; the colour of the flowers in most of the species.

1. *E. Centaúrium* Pers. (*common C.*): stem nearly simple, leaves ovate-oblong, flowers nearly sessile fasciculato-paniculate, calyx half as long as the tube of the opening corolla. *Chironia Schmidt*: *E. B. t.* 417.

Dry pastures, frequent. ☉. 6—9.—*Stem* 8—10 inches to a foot high. *Root-leaves* spreading, three-nerved, broader than those of the stem, which are in distant pairs. *Panicles* of *flowers* fasciated near the top of the stem, and forming a sort of *corymb*. *Corolla* handsome, rose-coloured.

2. *E. pulchella* Fries (*dwarf branched C.*); stem much branched, leaves ovate-oblong, flowers pedicellate in lax panicles, calyx nearly as long as the tube of the opening corolla. *Chironia Willd.*: *E. B. t.* 458.

Sandy sea-shores, England and Scotland. Cape Clear Island, Ireland. ☉. 7—10.—*Stems* 2—4 or 6 inches high, slender and much branched from near the base. *Panicle* spreading, leafy, dichotomous, with a single flower-stalk between the branches.—Perhaps only a *var.* of the preceding.

3. *E. latifolia* Sm. (*broad-leaved tufted C.*); stem 3-cleft at the top, flowers in dense forked tufts, calyx nearly as long as the tube of the opening corolla, segments of the corolla lanceolate, lower leaves broadly elliptical with 5 or 7 ribs. *E.B.S.* t. 2719.

Sea-shore. Sandy ground near the sea, to the north of Liverpool. Near Holyhead. County of Down, Ireland. Staffa. ☉. 7, 8. — Some Irish specimens have the *leaves* an inch and a half long, and three quarters of an inch broad, not confined to the root, and rising one pair close above the other; yet we can hardly persuade ourselves they are distinct from *E. Centaurium*. Mr. W. Wilson observes that the lobes of the corolla are sometimes oval.

4. *E. linorifolia* Pers. (*dwarf tufted C.*); stem simple or branched, radical leaves crowded spathulate, cauline ones oblong-linear obtuse, flowers sessile capitato-paniculate, calyx as long as the tube of the opening corolla deeply cleft. *Chironia littoralis* Sm.: *E. B.* t. 2305. *Erythræa* Hook.

Sandy coasts of Northumberland, Lancashire, Wales, Scotland. Portmarnock sands, Ireland. ☉. 6—8. — Varying in height from 2—6 inches. *Leaves* all narrow. *Cal.*-segments very long, equalling the tube of the corolla, in our specimens scarcely united by a membrane as in the 2 preceding species; but most of the characters given for this species are said to vary in individuals; and it has perhaps little right to be kept distinct from *E. Centaurium*.

3. GENTIANA Linn. Gentian.

Cal. 4—5-cleft. *Cor.* subcampanulate, funnel- or salver-shaped, tubular at the base, destitute of nectariferous glands. *Stam.* 5. *Styles* persistent, often combined. *Caps.* of 1 cell, 2-valved.—Named from *Gentius* king of Illyria, who, according to Pliny, brought into use the species so much valued in medicine, the *bitter gentian*, *G. lutea*.

* *Cor.* subcampanulate, the throat naked.

1. *G. Pneumonanthe* L. (*Marsh G.*); leaves linear obtuse, flowers terminal and axillary nearly sessile, corolla 5-cleft. *E. B.* t. 20.

Moist heathy places, in several parts of England. 4. 8, 9. — *Stem* upright, 4 to 10 or more inches high. *Corolla* large, deep blue within, having 5 broad greenish lines corresponding with the segments.

[*G. acaulis* L. (*E. B.* t. 1594) is neither a native nor naturalized. This is the *gentianella* of our gardens.]

** *Cor.* somewhat funnel- or salver-shaped, with 5 large and 5 smaller segments.

2. *G. verna* L. (*Spring G.*); stem cæspitose 1-flowered, leaves ovate lower ones crowded, calyx with sharp teeth and prominent

angles, corolla salver-shaped with 5 large and 5 small alternate bifid segments. *E. B.* t. 493.

Alpine pastures, rare. Middleton in Teesdale, Durham. Between Gort and Galway; and on limestone rocks in the Barony of Burrin, Clare; Ireland. 4. 4—6.

3. *G. nivâlis* L. (*small alpine G.*); branches single-flowered, leaves elliptical, corolla salver-shaped 5-cleft with intermediate small bifid segments, calyx cylindrical its angles keeled (brown). *E. B.* t. 896.

Mountains of Scotland, exceedingly rare; Craig Calleach; Ben Lawers; and Glen Isla, Clova. ☉. 8.— This rare and beautiful little alpine plant varies in height from 1 to 6 inches.

*** *Cor.* 4—5-cleft, somewhat salver-shaped, fringed at the throat.

4. *G. Amarëlla* L. (*small-flowered G.*); stem much branched, root-leaves oval spatulate upper ones ovato-lanceolate sessile, cal. lobes lanceolate nearly equal shorter than the tube of the corolla which is cylindrical or obconical its limb 5-cleft, germen linear-oblong and as well as the capsule sessile or shortly stipitate. *E. B.* t. 236.

Dry pastures in England and Scotland, but not very common. ☉. 7—9.— In the *Flora Londinensis* an opinion is expressed that the *G. Amarella* and *G. Germanica* are not specifically distinct. Grisebach, Koch, and others, think they are, ascribing to the former pointed calyx lobes and sessile capsules, and to the latter blunt calyx lobes and stalked capsules. *G. Germanica* is said to have been found at Ripon in Yorkshire, and at Tring, Herts; to flower later than our *G. Amarella*, and to have larger and blue flowers. Mr. Luxford, in the *Phyt. i.* p. 381, has shown that, so far at least as regards British specimens, there are many intermediate states. Our Swiss ones of *G. Germanica* have certainly a conspicuous stalk (about an eighth of an inch long) to the capsule, and constantly large and obconical flowers, while *G. Amarella* of the north of Europe has a sessile capsule; but these, the southern and northern forms, seem to be united by those of this country.

5. *G. campêstris* L. (*Field G.*); stem very much branched many-flowered, leaves ovato-lanceolate, 2 outer segments of the calyx very large ovate, corolla 4-cleft. *E. B.* t. 237.

Hilly pastures, frequent on a limestone or chalky soil in England and Ireland. Abundant in Scotland, especially near the sea. ☉. 8—10.— *Flowers* larger than in the preceding, and so numerous in specimens gathered on the Isle of Skye, that we have counted 86 on one plant.

[*Swertia perennis* L. (*E. B.* t. 1441) is said by Hudson to have been found in Wales by Dr. Richardson; but it is supposed that *Gentiana Pneumonanthe* had been mistaken for it.]

4. CHLÓRA Linn. Yellow-wort.

Cal. of 8 deep segments. *Cor.* nearly rotate. *Stam.* 8. *Style* 1, deciduous. *Stigmas* 2, bifid. *Caps* 1-celled, 2-valved, many-seeded.—Name derived from χλωρος, *pale* or *yellowish green*; in allusion to the colour of its flowers.

1. *C. perfoliáta* L. (*perfoliate* Y.); leaves connate-perfoliate ovate glaucous. *E. B.* t. 60.

Chalky and hilly pastures, chiefly in the middle and southern parts of England. In Ireland on gravelly soil about Dublin, frequent. ☉. 6—9.—*Plant* very glaucous, with remote *leaves*, paniced above, and bearing many bright yellow *flowers*, very bitter.

B. Segments of the corolla induplicate in æstivation. Leaves alternate. (Gen. 5, 6.)

5. MENYÁNTHES Linn. Buckbean.

Cal. 5-partite. *Cor.* funnel-shaped, fleshy, the segments hairy within. *Stam.* 5. *Stigma* 2-lobed. *Capsule* 1-celled, 2-valved; valves bearing the *seeds* along their middle; *seeds* parietal.—Name: μην, a *month*, and ανθος, a *flower*; some say from the duration of the flower.

1. *M. trifoliáta* L. (*Buckbean*, or *Marsh Trefoil*): *E. B.* t. 495.

Marshy places, boggy ground, &c., frequent. 4. 5—7.—*Rhizomes* densely creeping, and so matted as often to render the boggy ground firm where the plant grows. *Leaves* ternate, stalked: *leaflets* obovate, obscurely toothed. The base of the leaf is sheathing, whence arises a *flower-stalk*, supporting a compound *raceme* or *thyrsus* of many white *flowers*, each tipped externally with red and beautifully clothed with white filaments within.

6. VILLÁRSIA Vent. Villarsia.

Cal. 5-partite. *Cor.* rotate or funnel-shaped, thin and membranous, the limb often ciliated. *Stam.* 5. *Caps.* 1-celled, indehiscent (or 2-valved, the *seeds* attached to the margins of the valves).—Named in compliment to *M. de Villars*, author of *Flore de Dauphiné*.

1. *V. nymphæoídes* Vent. (*Nymphæa-like* V.); leaves orbicular-cordate floating, peduncles aggregate single-flowered, corollas ciliate. *Menyanthes* L.: *E. B.* t. 217. *Limnanthemum* Link.

Rare in rivers and still waters. Found in many places in England and Ireland, but usually where introduced. Certainly not indigenous in Scotland. 4. 7, 8.—A beautiful plant, easy of cultivation, and difficult to be eradicated. *Flower* large, yellow, curiously plaited. The canals in Holland are in some parts covered with this plant, which has

quite a different habit from the true *Menyanthes*. *Stigma* 5-cleft. Mr. Brown first observed that, in all the *aquatic* species of this genus, the *capsule* is valveless; 2-valved in the others; hence Grisebach has divided it into two genera, *Limnanthemum* and *Villarsia*: our British species belongs to the former.

ORD. LVII. POLEMONIACEÆ Juss.

Calyx of 5 divisions, persistent, sometimes irregular. *Corolla* regular, 5-lobed. *Stamens* 5, from the tube of the corolla. *Ovary* single, 3-celled; ovules solitary in each cell or superposed. *Style* simple. *Stigmas* 3. *Capsule* 3-celled, 3-valved, valves separating from the axis. *Embryo* straight. *Albumen* horny.—*Herbaceous* plants. Leaves *simple or compound, opposite or alternate*.

1. POLEMÓNIUM Linn. Jacob's Ladder.

Cor. rotate. *Stam.* inserted upon the 5 teeth or valves which close the mouth of the corolla. *Capsule* many-seeded.—Named from πολεμος, war, according to Pliny; this plant having caused a war between two kings who laid claim to its discovery!

1. *P. cæruleum* L. (*blue J.*); leaves pinnate glabrous, leaflets oblong-lanceolate. *E. B. t.* 14.

Banks and bushy places, rare; chiefly found in the north. In Derbyshire and Yorkshire. About Queensferry, Arniston, Bonnington and Delvine woods, Scotland, but probably introduced. Knockmaron Hill, Ireland. 4. 6, 7. — *Stem* 1—2 ft. high, angular. *Flowers* large, blue, sometimes white.

ORD. LVIII. CONVULVULACEÆ Juss.

Calyx of 4—5 sepals, permanent, imbricated, often very unequal. *Corolla* regular, deciduous; the *limb* plaited, 4—5-lobed. *Stamens* 4—5 from the base of the corolla. *Ovary* with 2—4 cells, seldom 1, sometimes in 2 or 4 divisions, few-ovuled, ovules solitary in each cell or collateral. *Style* 1, often divided, rarely 2. *Disk* annular, hypogynous or wanting. *Capsule* 1—4-celled, the valves fitting at their edges to the angles of a loose dissepiment, bearing the *seeds* at the base, or bursting transversely. *Albumen* in small quantity, mucilaginous. *Embryo* curved. *Cotyledons* plaited.—Herbs or Shrubs, generally climbing, milky, and purgative. Leaves *alternate or wanting*.—*Scammony* is the product of *Convolvulus Scammonia*; *jalap*, of *Exogonium purgans*. The *sweet potato*, a most valuable esculent root of the tropics and warm climates, is the *Batatas esculenta*. *Cuscuta* has no leaves, and is parasitical.

1. CONVULVULUS. *Calyx* not inclosed within bractæas. *Capsule* 2-celled, 2-valved. *Stems* leafy.
2. CALYSTEGIA. *Calyx* enclosed within 2 bractæas. *Capsule* 1-celled, 2-valved. *Stems* leafy.

3. CUSCUTA. Calyx not inclosed within bracteas. Capsule bursting transversely at the base. Leaves none.

1. CONVÓLVULUS Linn. Bindweed.

Cal. 5-sepaled, without external bracteas. *Cor.* campanulate. *Style* 1. *Stigmas* 2, linear cylindrical. *Ovary* 2-celled, 4-ovuled. *Caps.* 2-celled, 2-valved.—Named from *convolvere*, to *entwine*; whence comes, too, the English name *bindweed*.

1. *C. arvensis* L. (*small B.*); stem climbing, leaves sagittate their lobes acute, peduncles mostly single-flowered, bracteas minute distant from the flowers. *E. B. t.* 312.

Corn-fields, hedges, &c., especially in a light soil. *Fl.* 6, 7.—*Flowers* rather small, rose-coloured. *Root* running very deep into the ground, and difficult of extirpation.

2. CALYSTÉGIA R. Br. Calystegia. Hooded Bindweed.

Cal. 5-sepaled, inclosed within two large opposite *bracteas*. *Cor.* campanulate. *Style* 1. *Stigma* 2-lobed; lobes oblong, cylindrical, or flattened. *Ovary* sometimes 2-celled at the base, 1-celled towards the apex, 4-ovuled. *Caps.* 2-valved, 1-celled.—Name: *καλός*, *beautiful*, and *στέγη*, *a covering*; on account of the bracteas.

1. *C. sépium* Br. (*great C., or H.*); stem climbing, leaves sagittate their lobes truncate, peduncles 4-sided single-flowered, bracteas heart-shaped, stigmas short and obtuse. *Convolvulus L. : E. B. t.* 313.

Moist woods and hedges. *Fl.* 6—8.—*Flowers* very large, showy, pure white, sometimes rose-coloured, or striped with pink.

2. *C. Soldanella* Br. (*Sea-side C.*); stem prostrate glabrous, leaves reniform fleshy, peduncles 4-sided single-flowered their angles winged, bracteas ovate, stigmas ovate obtuse wrinkled. *Convolvulus L. : E. B. t.* 314.

Sea-shore in sandy places, frequent. *Fl.* 6—8.—*Rhizome* long, creeping. *Flowers* few, large, rose-coloured. *Ovary* 1-celled, with a ridge on each side in place of dissepiments. *Stigmas* large.

3. CÚSCUTA Linn. Dodder.

Cal. 4—5-cleft. *Cor.* campanulate, 4—5-lobed, the *tube* usually furnished with scales on the inside. *Styles* 2 (rarely united). *Ovary* 2-celled, 4-ovuled. *Caps.* bursting all round transversely at the base, 2-celled.—*Parasitical leafless plants, with long twining filiform stems.*—Derived probably from its Arabic name, *heshout*; or from the Hebrew *chuz*, to *bind* or *surround*.

1. *C. Europæa* L. (*greater D.*); heads of flowers bracteated sessile, styles included, corolla (at first) with a cylindrical tube

afterwards ventricose longer than the close-pressed calyx, "scales adpressed to the tube bifid distant below with rounded spaces." *E. B. t.* 378.

Parasitical on nettles, thistles, &c., not very common. ☉. 7—9. *Stems* very long, red, having small tubercles or papillæ, which, serve as roots. *Flowers* clustered, of a pale yellowish-rose colour. *Scales* seem always to exist in the *corolla*, but from being adpressed are not readily observed.

2. *C. *Hassiaca* Pfeiff. (*Lucerne D.*); "stem branched, flowers fascicled pedicellate, tube of corolla campanulate as long as the limb closed with converging scales, limb 5-cleft segments spreading with the points corniculate, styles 2, stigmas capitate."

On lucerne in Essex and Hertfordshire. ☉. 8, 9. — *Flowers* white, with the smell of the heliotrope. *Anthers* yellow. Of this we know nothing. It appears to have been introduced with lucerne.

3. *C. *Epilinum* Weihe (*Flax D.*); heads of fleshy flowers bracteated sessile, styles included, corolla with a globose tube scarcely longer than the campanulate calyx, "scales adpressed to the tube bifid fimbriated distant below with rounded spaces." *E. B. S. t.* 2850.

Parasitical on flax, in various places, and very injurious to the crop. ☉. 8. — *Stems* simple, yellowish-green. *Flowers* fewer in a head, much more succulent than in *C. Europæa*, and cellular when seen under a lens. *Tube* of corolla always globose; *filaments* very short. *Calyx* broad and spreading, with 5 broad acute teeth.

4. *C. Epithymum* L. (*lesser D.*); styles exserted, heads of many small flowers bracteated sessile, corolla with a cylindrical tube longer than the campanulate calyx, "scales converging as long as the tube of the corolla fimbriated and rounded at the end approximate below with narrow acute spaces." *C. Europæa Sm. : E. B. t.* 55.

Frequent on furze, heath, and thyme in exposed situations in England and Scotland. ☉. 7—10. — Smaller than *C. Europæa* and *C. Epilinum*, especially in the *flowers*. *Calyx-segments* acuminate.

5. *C. *Trifolii* Bab. (*Clover D.*); styles exserted, heads of small flowers bracteated sessile, "tube of the corolla cylindrical, scales converging half as long as the tube of the cor. fimbriate and rounded at the end distant below with rounded spaces, calyx narrowed below as long as the tube of the corolla." *E. B. S. t.* 2898.

On clover chiefly. Norfolk; Suffolk; Essex; Sussex; Isle of Wight. ☉. 7—9. — Supposed to have been introduced with clover-seed from the Continent. It is obviously very near the last, and chiefly differs by the form of the spaces between the scales; but

whether that and some other characters proposed in this genus do not depend on the nature of the plant to which the individual is attached has yet to be tested.

ORD. LIX. BORAGINACEÆ *De Cand.*

Calyx 5- rarely 4-cleft, persistent. *Corolla* hypogynous, monopetalous, most frequently regular, 5-cleft, sometimes 4-cleft, with an imbricative æstivation. *Stamens* 5, inserted into the *corolla*, alternate with its segments and equal to them in number, rarely more. *Ovary* 4- (rarely 2-) partite, 4-ovuled. *Ovules* pendulous. *Style* from near the base between the lobes of the ovary. *Achenes* 4, apart or rarely united by pairs. *Seeds* without or nearly without *albumen*. *Radicle* superior.—Herbs or Shrubs. Leaves *alternate*, without stipules, usually *scabrous*. Flowers *generally* in more or less compound unilateral and *circinate cymes* (presenting the appearance of spikes or racemes).—The BORAGINACEÆ are mild, emollient, and mucilaginous, sometimes slightly bitter and narcotic. The roots of several species afford a red dye.

* *Throat of the corolla not closed with scales or valves.*

1. ECHIUM. Cor. irregular. Filaments long, unequal.
2. PULMONARIA. Cor. regular, funnel-shaped. Cal. prismatic, 5-cleft.
3. LITHOSPERMUM. Cor. regular funnel-shaped. Cal. 5-partite. Stamens included, filaments very short. Achenes stony.
4. MERTENSIA. Cor. regular, funnel-shaped. Cal. 5-parted. Stamens protruded beyond the tube, filaments elongated. Achenes sub-drupaceous.

** *Throat of the cor. more or less closed with scales or valves.*

† *Filaments bifid.*

9. BORAGO. Inner branch of filaments bearing an exserted anther. Cor. rotate.

†† *Filaments entire. Stamens included.*

‡ *Scales subulate, alternate with the filaments.*

8. SYMPHYTUM. Cor. tubular, campanulate.

‡‡ *Scales or valves obtuse.*

7. LYCOPSIS. Tube of cor. slightly bent, limb oblique.
6. ANCHUSA. Tube of cor. straight; lobes straight (not convolute) in æstivation. Cal. in fruit equally divided, terete. Nuts ovate, compressed, wrinkled. Flowers in leafy racemes.
5. MYOSOTIS. Tube of cor. straight; lobes convolute in æstivation. Cal. in fruit equally divided, terete. Nuts ovate, compressed, smooth. Racemes leafless.
10. ASPERUGO. Tube of cor. straight. Cal. in fruit compressed, unequally 2-valved. Nuts ovate, compressed. Flowers axillary, solitary.
- 10^a. ECHINOSPERMUM. Tube of cor. straight. Cal. equally divided, terete. Nuts triquetrous, with muricated margins.
11. CYNOGLOSSUM. Tube of cor. straight. Cal. equally divided, terete. Nuts depressed, roundish-ovate, muricated.

* *Throat of the corolla naked (without conspicuous scales or valves). (Gen. 1—4.)*

1. *E'CHIUM* Linn. Viper's Bugloss.

Cor. irregular; its throat dilated, open and naked. *Filaments* very long, unequal. *Style* bifid. *Achenes* wrinkled, with a flat base, seated on a hypogynous disk, free from the style.—Named from *εχις*, a *viper*; because this, or some allied plant, was supposed to be an effectual remedy against the bite of that animal.

1. *E. vulgare* L. (*common V.*); stem herbaceous simple hispid with tubercles, leaves linear-lanceolate hispid, flowers in lateral short spikes, stamens longer than the corolla. *E. B. t.* 181. *E. italicum* Huds.: *E. B. t.* 2081. (not L.)

On old walls, banks, fields, and waste grounds, especially in a sandy or gravelly soil: common on the Surrey hills, with pale fl. ♂. 6, 7. — *Stems* 2—3 feet high. *Root-leaves* spreading, petioled. *Spikes* of flowers lateral, secund, recurved, forming one long compound spike or raceme. *Corolla* at first reddish-purple, then brilliant blue, sometimes white.

2. *E. violaceum* L. (*purple-flowered B.*); stem herbaceous diffuse branched pilose-hispid, lower leaves ovate-oblong petiolate, upper ones oblong cordate and somewhat amplexicaul at the base, spikes elongated, stamens scarcely longer than the corolla. *E. B. S. t.* 2798.

Plentiful on the sandy grounds in Jersey. ♂. 7.—Quite a distinct species from *E. vulgare*, and certainly the *E. violaceum* of Linnæus and the Continental botanists. It is much less hispid than *E. vulgare* and destitute of tubercles. *Stem* branched, spreading, often decumbent. *Spikes* much elongated, bearing more distant flowers. *Stamens* very unequal, 2 of them much longer than the corolla, two of them about the same length, and 1 shorter.

2. *PULMONÁRIA* Linn. Lungwort.

Cal. with 5 angles, 5-cleft. *Cor.* regular, funnel-shaped, its throat naked. *Stamens* included: *filaments* very short. *Style* simple. *Achenes* with a flat base, seated on a hypogynous disk, free from the style.—Named from *pulmo*, the *lungs*; from the use formerly made of this and other *Boraginaceæ* in pulmonary affections. In the present instance, the spotted leaves, resembling the lungs, were the principal recommendation.

1. *P. officinális* L. (*common L.*); leaves scabrous, radical ones ovate or cordate petiolate, upper ones of the stem sessile ovate. *E. B. t.* 118 (*excl. the root-leaves*).

Woods and thickets, rare. Dane's wood, near Slindon, Sussex; Durham and Bedfordshire. Near Edinburgh and Glasgow, but scarcely wild. 4. 5.—About 1 foot high. *Stem leaves* all more

or less ovate; lower ones petiolate, upper ones sessile; all with short hairs, and frequently spotted. *Flowers* purple.

2. *P. angustifolia* L. (*narrow-leaved L.*); leaves lanceolate scabrous, radical ones petiolate, upper ones sessile. *E. B. t.* 1628.

Woods and thickets, rare. Isle of Wight, and New Forest, Hampshire. 4. 3—6.— Usually taller than the preceding, and different in the shape of its foliage, which is seldom spotted; but these marks are not constant. *Inflorescence* subcapitate.

3. LITHOSPÉRMUM Linn. Gromwell.

Cal. in 5 deep segments. *Cor.* funnel-shaped, its mouth naked (or with very minute scales). *Stamens* included: *filaments* very short. *Style* simple. *Achenes* stony, with a truncated base, seated on a hypogynous disk, free from the style.— Named from λίθος, a stone, and σπέρμα, a seed; from its very hard shining seeds or achenes. The English *gromwell* has a similar origin in Celtic: *graun*, a seed, and *mil*, a stone.

1. *L. officinale* L. (*common G.*); stem erect very much branched, leaves broadly lanceolate acute nerved rough above hairy beneath, tube of the corolla as long as the calyx, achenes smooth. *E. B. t.* 134.

Dry, waste, and uncultivated places, and among rubbish: rare in Scotland. 4. 6.— *Stem* 1 to $1\frac{1}{2}$ foot high. *Fl.* pale yellow. *Achenes* whitish-brown, highly polished; seldom more than 2 or 3 ripening in each calyx.

2. *L. arvensé* L. (*Corn G.*, or *Bastard Alkanet*); stem erect branched, leaves lanceolate acute hairy, calyx a little shorter than the corolla its segments patent when containing the ripe wrinkled nuts. *E. B. t.* 123.

Corn-fields and waste ground. ☉. 5, 6.— *Corollas* white. *Caly-cine segments* thrice as long as the fruit.

3. *L. purpureo-cæruleum* L. (*creeping or purple G.*); barren stems prostrate, leaves lanceolate acute hairy, tube of the corolla much longer than the calyx, achenes smooth. *E. B.* 117.

Thickets on a chalky soil, rare. Near Denbigh, in Wales; Taunton, Somersetshire; Marychurch, Devon; Darenth wood and Greenhithe, Kent; Caswell Bay, Glamorganshire. 4. 6, 7.— Distinguished from the two preceding species by its large and bright blue *flowers*.

4. MERTÉNSIA Roth. Smooth-Gromwell.

Cal. 5-cleft or 5-partite, half the length of the cor. *Corolla* funnel-shaped, naked or with 5 plaits or wrinkles between the stamens. *Stamens* inserted near the apex of the tube, protruded; *filaments* ligulate; *anthers* 2-lobed at the base. *Style* filiform,

simple, often elongated after flowering. *Achenes* subdrupaceous, with a flat or prominent base seated on a hypogynous disk, free from the style.—Named in honour of *F. C. Mertens*, a German botanist.

1. *M. marítima* Don (*Sea-side S.*); stems procumbent branched, leaves ovate rough with callous dots, upper ones lanceolate, all fleshy and glaucous, achenes smooth. *Pulmonaria* L.: *E. B.* t. 368. *Steenhammera* Reich. *Lithospermum* Hook.

Sea-coast among sand or loose stones. Rare in England, and only on the west coast. Wales. Plentiful in the north and west, rarely in the east, of Scotland. Between Portrane and Skerries, Ireland. 4. 5, 6.—This is quite a northern plant, extending to the arctic regions. Lower leaves on foot-stalks; upper ones sessile. Flowers somewhat racemose, of a beautiful purplish blue: calyx 5-parted, angular when in fruit; tube of the cor. short, glabrous inside at the base, with minute wrinkles at the mouth; filaments linear, flattened. Whole plant very glaucous; and, if the bloom is rubbed off, rough callous points appear, which become white and almost stony in drying, when the rest of the plant turns nearly black. The flavour of the leaves resembles that of oysters.

** *Throat of the corolla more or less closed with scales.* (Gen. 5—11.)

5. *MYOSÓRIS* Linn. Scorpion-grass.

Cal. 5-cleft. *Cor.* salver-shaped, the lobes obtuse, twisted in æstivation, the mouth half-closed with short rounded valves. *Stamens* included. *Style* simple. *Achenes* smooth, attached to the bottom of the calyx by a minute flat spot (not perforated at the base).—Named from *μυς, μυος*, a mouse, and *ους, ωτος*, an ear; from the shape of the leaves.

* *Hairs on the calyx all straight and adpressed.*

1. *M. palústris* With. (*creeping Water S.*, or *Forget-me-not*); calyx with straight adpressed bristles cleft to about one third of its length, when in fruit campanulate open shorter than the diverging pedicels, teeth short triangular, limb of the corolla flat longer than the tube, lobes slightly emarginate, style as long as the calyx and tube of the corolla.— α . pubescence of the stem spreading (or wanting). *E. B.* t. 1973. *M. scorpioides palustris* L.: *Sm. Fl. Brit.* i. p. 212.— β . pubescence more or less adpressed. *M. strigulosa* Reich.

Ditches and sides of rivers, abundant. 4. 6—8.—A very beautiful, though common plant, and considered to be the emblem of friendship in almost every part of Europe. About 1 foot high. Flowers among the largest of our species, bright blue with a yellow eye, and a small white ray at the base of each segment.

2. *M. répens* Don (*creeping Water S.*); calyx with straight adpressed bristles cleft to about the middle, when in fruit open or connivent shorter than the diverging pedicels, teeth lanceolate, limb of the corolla flat longer than the tube, lobes somewhat emarginate, style nearly as long as the tube of the calyx, pubescence of the stem spreading. *Borr.* in *E. B. S.* t. 2703.

Moist boggy situations in England and Scotland. γ . 6—8.— In this and the next the style is overtopped by the anthers, and about half the length of the tube of the corolla; when in fruit it is scarcely longer than the achenes.

3. *M. cæspitosa* Schultz (*tufted Water S.*); calyx with straight adpressed bristles cleft to about the middle, when in fruit campanulate open shorter than the diverging pedicels, teeth lanceolate, limb of the corolla concave (or flat when fully expanded) equalling the tube, style about as long as the tube of the calyx, pubescence of the stem adpressed. *Borr.* in *E. B. S.* t. 2661.

Common in watery places, both on clay and bog. \odot or δ . (γ or δ , *Sm.*) 6—8.— *Root fibrous*, not creeping, annual or biennial. *Stem* throwing out fibres from the lower joints. *Calyx* sparingly sprinkled with adpressed white bristles, cleft more deeply than in *M. palustris*, perhaps less than in *M. repens*. *Corolla* varying in size, but usually not much exceeding the calyx.

** *Hairs on the calyx-tube (some or all of them) spreading, curved or hooked at the apex.*

4. *M. alpéstris* Schmidt (*Rock S.*); calyx with straight and a few curved bristles deeply 5-cleft attenuate at the base, when in fruit campanulate open shorter than the slightly spreading pedicels, limb of the corolla flat longer than the tube, style half as long as the calyx, achenes not carinate, root-leaves on long stalks. *M. rupicola Sm.*: *E. B.* t. 2559. *M. suaveolens W. et K.* (not *Poir.*)

Highland mountains, at a great elevation. On the Breadalbane range, extending thence to Schehallion. Cronkley Fell, Teesdale. γ . 7, 8.— *Stem* 4—6 inches or even 1 foot high, with patent leaves. *Lower leaves* on very long foot-stalks. Nothing can exceed the beauty of the large blue *flowers*, which are at first so compact as to be almost capitate, then lengthened into racemes. Fries, Koch, and De Candolle consider this an alpine state of *M. sylvatica*: the chief difference consists in the smaller size, long-stalked radical leaves, and open, not closed, fructiferous calyx.

5. *M. sylvatica* Hoffm. (*upright Wood S.*); calyx with spreading uncinat bristles deeply 5-cleft obtuse at the base, when in fruit ovate closed shorter than the diverging pedicels, limb of the corolla flat longer than the tube, style nearly as long as the calyx, achenes carinate, root-leaves on short dilated stalks. *E. B. S.* t. 2630.

In dry shady places; chiefly in the north of England and Lowlands of Scotland, but not common. Surrey, Essex, and Kent; Holt, Norfolk. 4. 5—8.—*Flowers* very large and handsome. A smaller white variety is often cultivated under the name of *M. alba*. Various authors and cultivators pronounce this plant perennial (Fries says “perennans;” Wahlenberg, “subperennans”), whilst the following species is annual or biennial, between which and the present we can point out no distinctive characters more satisfactory than the somewhat more deeply divided calyx of *M. sylvatica*, its shorter and less remarkably hooked bristles, the broader and flatter corolla, longer style, and the greater size of the whole plant.

6. *M. arvensis* Hoffm. (*Field S.*); calyx with spreading uncinat bristles half-5-cleft, when in fruit ovate closed shorter than the diverging pedicels, limb of the corolla concave equaling the tube, style very short, raceme stalked. *E. B. S.* t. 2629. *M. intermedia* Link.

Very common in cultivated ground, hedge-banks, groves, &c. ☉ or ♂. 6—8.—Although Linnæus included other plants, now regarded as species, in his ideas of *M. scorpioides* and *arvensis*, and even preserved as such in his herbarium a specimen of the next species, yet, since it is evident from *Fl. Suec.* that this is what he held to be the type of the *var.*, we think it best to follow those botanists who have named it *M. arvensis*: Fries asserts that every Swedish botanist knows it to be the “ipsissimam *M. arvensem* Linn.,” it is, moreover, the only one usually found in cultivated fields. This species and *M. sylvatica* are inextricably confounded in *E. Fl.*, perhaps not unjustly.

7. *M. collina* Hoffm. (*early Field S.*); calyx with spreading uncinat bristles, when in fruit ventricose open equalling the diverging pedicels, limb of the corolla concave shorter than the tube, style about as long as half the calyx, raceme stalked usually with one distant flower at the base. *E. B. S.* sub fol. 2629. *M. arvensis* *E. B.* t. 2558. *M. hispida* Schlecht.

On sandy banks, wall-tops, and other very dry places. ☉. 4, 5. —“May at all times be distinguished from *M. versicolor* at a glance, by its brilliant blue flowers, which do not expand till by the uncurling of the raceme they are brought into a perpendicular position, but continue open till the next 2 or 3 above them are expanded. Colour an unchangeable blue.” *J. E. Bowman.*

8. *M. versicolor* Reich. (*yellow and blue S.*); calyx with spreading uncinat bristles, when in fruit oblong closed longer than the almost erect pedicels, limb of the corolla concave shorter than the exerted tube, style as long as the calyx, raceme stalked. *E. B.* t. 2558 (ad calcem), and t. 480 (left-hand figure).

Common in wet meadows, &c., as well as dry places; hence varying much in height. ☉. 4—6.—*M. versicolor* is distinguishable at once from *M. stricta* (which is *M. versicolor* β. Lehm. and *M. arvensis*

Reich.) by its stalked racemes. In *M. stricta* the pedicels are also shorter than the calyx; but the flowers begin among the leaves, sometimes from the very base of the stem; we believe, too, that none of them are yellow, and that they have a much shorter tube. "In *M. versicolor* the flowers are first yellow, then they acquire a tinge of blue, and finally turn quite blue as the corolla shrivels. They also expand on the curled portion of the raceme while they are inverted, and by the time they become erect are shrivelled." *J. E. Bowman*.

6. ANCHÚSA Linn. Alkanet.

Cal. 5-cleft, or 5-partite. *Cor.* funnel-shaped, tube straight, its mouth closed with convex connivent scales, the segments straight (not twisted) in æstivation. *Stamens* included. *Achenes* depressed. *Nuts* concave at the base, seated on a hypogynous disk, free from the style.—Name: *αγκουσα*, in Greek, from *αγκω*, to *constrict*; "because any one chewing the leaves, and spitting into the mouth of a viper, will kill it," (*Diosc.*) by means of its (supposed) power of creating irritation and inflammation in the throat. (!) The roots of *A. tinctoria* yield a red dye which was used in former times to stain the face.

1. *A. *officinális* L. (*common A.*); leaves oblong-lanceolate, spikes crowded unilateral, bractæas ovato-lanceolate as long as the calyx. *E. B.* t. 662.

Waste ground, rare. On the Links at Hartley Pans, Northumberland. Kilsyth and Arnbrae; and at Uddingston, 8 miles from Glasgow. *Æ.* 6, 7. — *Stem* 1—2 feet high, rough and hispid. *Cor.* deep purple, the segments of the limb rather narrow.

2. *A. *sempervirens* L. (*evergreen A.*); leaves ovate, lower ones upon long stalks, peduncles axillary, flowers subcapitate accompanied by two leaves. *E. B.* t. 45.

Waste ground, among ruins, and by road-sides, in many parts of England; perhaps wild in Yorkshire and Devonshire. Scotland, but certainly introduced. *Æ.* 5, 6. — *Flowers* of a beautiful blue. The shape of the *corolla* is, as Sir J. E. Smith observes, rather salver- than funnel-shaped; and thus the genus is with difficulty distinguishable from *Myosotis*, unless attention be paid to the achenes, and the æstivation of the corolla. Daily experience teaches that the more natural the families, the greater is the skill requisite for framing decided marks of distinction between the genera.

7. LYCÓRSIS Linn. Bugloss.

Cal. deeply 5-cleft. *Cor.* funnel-shaped, with a curved tube, the mouth closed with convex connivent scales: limb oblique. *Stamens* included. *Achenes* depressed, concave at the base, seated on a hypogynous disk, free from the style.—Named from *λυκος*, a *wolf*, and *οψις*, a *face*; from a fancied resemblance in its gaping flower to the head of a wolf.

1. *L. arvensis* L. (*small B.*); leaves lanceolate repand-denticulate very hispid, calyx erect while in flower. *E. B.* t. 938.

Corn-fields and hedge-banks, frequent. ☉. 6, 7. — Whole plant very hispid; hairs or bristles seated on a white, callous tubercle. *Lower leaves* lengthened into a petiole; *upper ones* sessile, semiamplexicaul. *Racemes* leafy. *Flowers* small, bright blue; differing from those of *Anchusa* in the curvature of the tube.

8. *SÝMPHYTUM* Linn. Comfrey.

Cal. 5-cleft or 5-partite. *Cor.* enlarged upwards, its throat closed with connivent lanceolate subulate scales. *Achenes* ovate, excavated at the base, seated on a hypogynous disk, free from the style. — Named from *συνφύω*, to *unite*; from its imagined vulnerary qualities.

1. *S. officinále* L. (*common C.*); stem winged above, leaves ovato-lanceolate attenuated at the base and very decurrent. *E. B.* t. 817.

Banks of rivers and watery places frequent. 4. 5, 6. — *Stem* 2—3 ft. high branched above. *Root-leaves* ovate, petiolate. *Racemes* in pairs, secund, drooping. *Corollas* large, yellowish-white, often purple.

2. *S. tuberósum* L. (*tuberous C.*); stem simple, leaves ovate-oblong attenuate at the base, upper ones only slightly decurrent. *E. B.* t. 1502.

Shady woods and river-banks; frequent in Scotland, particularly in the Lowlands. Rare in England. 4. 6, 7. — Resembling the last, but it is very distinct. *Upper leaves*, from which the *peduncles* spring, generally in pairs, large, ovato-lanceolate, a little decurrent; whereas those of *S. officinale* are very narrow, and run down into winged appendages to the stem.

9. *BORÁGO* Linn. Borage.

Cal. deeply 5-cleft. *Cor.* rotate, having its throat closed with 5 erect obtuse and emarginate teeth. *Stamens* exerted: *filaments* bifid, the inner branch bearing the anther; *anthers* linear-lanceolate, connivent. *Achenes* with an excavated base, seated on a hypogynous disk, free from the style. — Named from *cor*, the *heart*¹, and *ago*, to *bring*, thence corrupted into *Borago*: or more directly from *borrach*, Celtic, a *courageous* or *noble* person.

1. *B. * officinális* L. (*common B.*); lower leaves obovate attenuate at the base, segments of the corolla ovate acute spreading. *E. B.* t. 36.

Among rubbish and waste ground. ♂. 6, 7. — Whole plant

¹ Hence the old adage — “ I Borage always bring Courage.”

very hispid. *Stem-leaves* petiolate and eared at the base, uppermost ones sessile. *Cor.* large, brilliant blue, with very prominent *stamens*.

10. ASPERÚGO Linn. Madwort.

Cal. 5-cleft, unequal, with alternate smaller teeth, enlarged and compressed in fruit. *Cor.* (short) funnel-shaped, its mouth closed with convex connivent scales. *Achenes* compressed, warted, fixed by their edge to the persistent base of the *style*. — Named from *asper*, rough; eminently applicable to this plant, even among the group of *Asperifoliæ*.

1. *A. *procumbens* L. (*German M.*): *E. B. t.* 661.

Waste places, principally in the north. Durham; Northumberland; Salop; Essex; Kent. Caernarvonshire. About Haddington, and near Edinburgh; Forfar and Moray shires. ☉. 6, 7. — *Stems* procumbent, angular, rough with short hooked prickles. *Leaves* oblong-lanceolate, solitary or opposite, or 3—4 nearly from the same point of the stem; lower ones petiolate, all rough and slightly hispid. *Flowers* blue, axillary, solitary. *Peduncles* short, at first erect, then curved downward. *Cal.* small, much enlarged in fruit.

[*Echinosperrum Lappula* Lehm. was found at Southwold, Suffolk, in August, 1839; and near Ware Mill, Hertfordshire, in 1841; and *E. deflexum* Lehm. near Alton in Hampshire; but both, we fear, introduced from the Continent.]

11. CYNOGLOSSUM Linn. Hound's-tongue.

Cal. 5-cleft. *Cor.* (short) funnel-shaped, its mouth closed with prominent convex, connivent, scales. *Stamens* included within the corolla. *Achenes* roundish ovate, depressed, muricate, fixed by the edge to the persistent base of the *style*. — Named from *κυνων*, a dog, and *γλωσσα*, a tongue; from the shape and texture of the leaf.

1. *C. officinale* L. (*common H.*); lower leaves elliptical stalked softly downy, upper ones lanceolate narrowed below subcordate and semiamplexicaul, racemes without bractæas. *E. B. t.* 921.

Waste grounds and by road-sides; less frequent in Scotland. ♂. 6, 7. — Whole plant soft to the touch, dull-green, with a fetid smell; often two feet high. Lower leaves on long foot-stalks. *Flowers* purplish-red. *Fruit* very rough: *achenes* flat in front, surrounded by a thickened slightly prominent margin.

2. *C. sylvaticum* Hænke (*green-leaved H.*); stem-leaves lanceolate broad at the base shining sessile slightly hairy and scabrous especially beneath, upper ones somewhat narrowed below and amplexicaul, racemes without bractæas. *E. B. t.* 1642. *C. montanum* Lam.

Shady places by road-sides, &c., in the middle and east of England,

rare. Carse of Gowrie in Scotland. Near Balbriggan, Ireland. ♂. 6, 7. — Distinguished readily from the last by its more or less shining and brighter-coloured *leaves*, free from pubescence, and their different figure. *Root-leaves* ovato-lanceolate, on very long foot-stalks. *Achenes* flat in front, without a prominent margin.

ORD. LX. SOLANACEÆ Juss.

Calyx 5- rarely 4-partite or -cleft, persistent. *Corolla* monopetalous, hypogynous, its *limb* 5-cleft, equal or somewhat unequal, deciduous, with a plicate or imbricative æstivation. *Stamens* inserted into the corolla, alternate with its segments and equalling them in number. *Ovary* 1- 2- or 4-celled. *Style* 1. *Stigma* obtuse, rarely lobed. *Pericarp* 1- 2- or 4-celled; either a *capsule* with a parallel double dissepiment, or a *berry* with the receptacles united to the dissepiments. *Seeds* numerous, peritropal. *Embryo* included in a fleshy *albumen*, often out of the axis. *Radicle* inferior, turned away from the more or less lateral *hilum*. — Herbs or shrubs. *Leaves* often in pairs or fascicled, without stipules, *floral ones* sometimes opposite. Inflorescence usually extra-axillary (lateral with respect to the petiole). Linnaeus called this family *Luridæ*, and fancied that their lurid appearance indicated the dangerous properties common to many of them. They are acrid and narcotic, as the *deadly nightshade*, *mandragora*, *henbane*, *thorn-apple*, *tobacco*, &c.; whilst the root of one, when cooked, affords a most important article of food, the *potato*; and the fruits of the *love-apple*, *winter-cherry*, and *capsicum* are condiments.

1. DATURA. Cal. tubular. Caps. 4-valved.
2. HYOSCYAMUS. Cal. tubular. Caps. opening transversely with a lid.
3. ATROPA. Cal. 5-partite. Anthers distant. Berry 2-celled.
4. SOLANUM. Cal. deeply divided or campanulate. Anthers connivent, opening by pores. Berry 2-celled.

* *Margins of the lobes of the corolla imbricated in æstivation.*

ATROPEÆ.

1. DATURA Linn. Thorn-apple.

Cal. tubular, deciduous. *Cor.* funnel-shaped, angular, plaited. *Anthers* opening by longitudinal slits. *Stigma* 2-lobed. *Capsule* half-4-celled, 4-valved. — Named from its Arabic appellation *tatôrah* (Forskal). In some parts of the East Indies it is called *daturo*.

1. D. * *Stramónium* L. (common T.); herbaceous, leaves ovate angulato-sinuate glabrous, fruit ovate erect clothed with numerous nearly equal spines. *E. B. t.* 1288.

Waste ground in England. ☉. 7—10. — The narcotic qualities of this plant are well known. The *capsule* is 2-celled; but each cell is again divided below by a dissepiment, so that the lower portion has

4 dissepiments of which 2 only reach the top; the summit is truly 2-celled. *Flowers* white. A variety, with purple *stems* and *flowers*, was found by Dr. Bromfield at Southsea, Portsmouth.

2. *HYOSCYAMUS* Linn. Henbane.

Cal. tubular, 5-cleft. *Cor.* funnel-shaped, oblique. *Anthers* opening by longitudinal slits. *Stigma* capitate. *Caps.* 2-celled, opening with a lid.—Named from *ύς, ύος*, a hog, and *κναιμος*, a bean. Hogs are said to eat the fruit, which bears some resemblance to a bean: the seeds do not prove injurious, though the plant is esteemed poisonous,

1. *H. niger* L. (*common H.*); leaves amplexicaul sinuate, flowers nearly sessile axillary unilateral. *E. B. t.* 591.

Waste places, especially in a chalky soil, often near towns and villages. ☉ or ♂. 6—8.—Whole plant covered with unctuous fetid hairs. *Stem* much branched, rounded. *Leaves* subovate. *Calyx* veined, as is the large dingy yellow *corolla*, with purplish-brown lines, which however are wanting in a variety found in Surrey by Mr. Watson; its tubular part swells and firmly encloses the *capsule*, of which the upper portion falls off like a lid. *Plant* highly narcotic.

3. *A'TROPA* Linn. Dwale.

Cal. 5-partite. *Cor.* campanulate, with a short tube, the lobes equal. *Stam.* distant above. *Berry* of 2 cells.—Named from *Atropos*, one of the Fates, in allusion to its deadly quality; whence also the English name *dwale* (*deuil*, Fr.; *dolor*, Lat).

1. *A. Belladonna* L. (*common D.*, or *deadly Nightshade*); stem herbaceous, leaves ovate undivided, flowers axillary on short peduncles. *E. B. t.* 592.

Hedges and waste places, especially among ruins and near towns. 4. 6—8.—*Stems* 3 feet and more high. *Leaves* entire, some very large, but placed in pairs of unequal sizes. *Flowers* drooping, lurid purple. *Berries* shining, black, highly injurious when taken internally. Their effects are said to be best counteracted by drinking plentifully of vinegar.

** *Lobes of the corolla valvate in æstivation.* SOLANÆÆ.

4. *SOLANUM* Linn. Nightshade.

Cal. of 5—10 segments. *Cor.* rotate. *Anthers* opening with 2 pores at the extremity. *Berry* roundish, 2- or more-celled.—Name of doubtful origin. According to some from *solamen*, on account of the *comfort* or *solace* derived from some species as a medicine.

1. *S. Dulcamara* L. (*woody N.*, or *Bitter-sweet*); stem without thorns shrubby flexuose climbing, leaves cordate, upper ones

auricled hastate, corymbs drooping inserted opposite the leaves. *E. B. t.* 565.

Moist hedges and thickets. Not common in Scotland. About Dublin. *h.* 6—8.—Glabrous or hairy. *Flowers* purple, with 2 green tubercles at the base of each segment. *Anthers* large, yellow, united in a pyramidal or cone-shaped figure. *Berries* ovate, red.—This has been much employed in medicine, especially in rustic practice. A *var.* with prostrate diffuse stems, and few or none of the leaves hastate, grows on the pebbly sea-beach in Sussex, Cornwall, and Galway; it was first noticed by Ray.

2. *S. nigrum* L. (*common N.*); stem without thorns herbaceous with tubercled angles, leaves ovate bluntly toothed and waved, umbels lateral drooping. *E. B. t.* 566.—*α.* pubescence incurved upwards, berries usually black.—*β.* pubescence patent, berries red. *S. miniatum* Bernh.

Waste places, fields, &c., frequent. *β.* Jersey. ☉ or ♂. 6—11. *Flowers* white. *Berries* globose, black or green—red in the *var. β.* The Jersey variety is probably *S. miniatum* Bernh.; but most botanists agree that it is not a distinct species.

ORD. LXI. OROBANCHACEÆ Vent.

Calyx variously divided, persistent. *Corolla* irregular, persistent, with an imbricative æstivation. *Stamens* 4, didynamous. *Anthers* 2-celled, the cells distinct, parallel, often mucronate. *Ovary* on a fleshy disk, 1-celled, with 2—4 parietal, many-seeded receptacles. *Style* 1. *Stigma* 2-lobed. *Capsule* 2-valved. *Seeds* very minute. *Embryo* at the apex of a fleshy *albumen*.—Herbaceous, dingy-coloured, somewhat succulent, leafless plants, glandular and scaly, generally parasitical on the roots of other plants.

1. OROBANCHE. Calyx of 2 sepals more or less united. Cor. ringent, 4—5-cleft.
2. LATHRÆA. Calyx campanulate, 4-cleft. Cor. two-lipped; upper lip entire, concave.

1. OROBÁNCHÉ Linn. Broom-rape.¹

Cal. of 2 lateral, often combined and bifid sepals, bracteated. *Cor.* ringent, 4—5-cleft. *Germen* with a gland at the base beneath.—*Leafless, brown or purplish, herbaceous, scaly*

¹ In all parasitical plants the appearance may be so completely altered by the structure of the tribe they prey upon, that we fear many reputed species are merely different forms of the same species. Some of the characters we have given from Reuter (in De Candolle's *Prodromus*) and others, who have studied the genus in a recent state, are not to be detected in dried specimens; but no species can be considered satisfactory by the botanist which cannot be distinguished in both ways. Indeed, in all plants the question is not what is a species? about which very different opinions will always be entertained; but how we are to impart our knowledge so that others may recognise the aggregate of individuals, called species, in the herbarium as readily as in the field.

plants, often attached to the roots of other plants. — Named from *οροβος*, a leguminose or pea-like plant, and *αγχειν*, to strangle; the roots, being frequently attached to plants of that description, are supposed to injure them.

* *Bracteas* solitary under each flower. *Sepals* 2, entire or bifid, distinct or connected below in front. *Valves* of capsule cohering at the base and apex. *Osproleon*.

1. *O. májor* L.? (*greater B.*); stem simple, sepals 2-nerved equally bifid (or entire) nearly as long as the tube of the corolla, corolla campanulate ventricose at the base in front curved on the back, lips wavy scarcely denticulate, upper one concave nearly entire, lower one in 3 segments, the middle lobe twice as large as the lateral ones, stamens inserted near the base of the corolla glabrous below, their upper part and the style glandular-pubescent, stigma yellow the lobes divaricate. *E. B. t. 421. O. Rapum Thuill.*

On the roots of broom and furze and other leguminose plants, not unfrequent in England. \mathcal{L} . 5—7. — *Stem* 1—1½ ft. high, leafless. Whole plant dingy purplish-brown, pubescent. *Stem* swelling at the base and very scaly; scales more distant upwards and becoming *bracteas* among the flowers, one at the base of each. *Flowers* in a long spike. *Cor.* large.

2. *O. caryophyllácea* Sm. (*Clove-scented B.*); stem simple, sepals many-nerved lanceolate equally bifid shorter than the tube of the corolla touching each other or combined in front, corolla campanulate curved on the back, limb spreading unequally toothed, upper lip broad 2-lobed, lower 3-lobed, the segments erect obtuse nearly equal wavy, stamens inserted above the base of the corolla, hairy below, their upper part and the style glandular-pilose, stigma dark purple the lobes close. *E. B. S. t. 2639. O. Galii Dub.*

On the roots of *Galium Mollugo*, in South Kent. \mathcal{L} . 7.

3. *O. rúbra* Sm. (*red B.*); stem simple, sepals 1-nerved subulate acuminate longer than the tube of the corolla undivided, corolla tubular-campanulate slightly curved externally and the upper lip within glandular-pubescent, lips acutely toothed and crisped, upper one 2-lobed, lower 3-lobed the middle segment rather longer than the lateral ones, stamens inserted near to the base of the corolla slightly hairy below, their upper part and the upper part of the style glandular-hairy, stigma pale red the lobes close. *E. B. t. 1786.*

Frequent upon basalt and trap rocks in the Hebrides and adjacent shores of the mainland, parasitical upon *Thymus Serpyllum*. Near Kirkcaldy. Cave-hill, near Belfast, Ireland. Cornwall. \mathcal{L} . 7, 8. — We have no doubt of this and *O. Epithymum* DC. being the same; but they differ in character as much as some of the other species.

4. *O. elatior* Sutt. (*tall B.*); stem simple, sepals many-nerved equally bifid as long as the tube of the corolla connected in front, corolla tubular-campanulate curved, limb spreading unequally toothed wavy, upper lip 2-lobed, lower 3-lobed, the segments nearly equal acute, stamens inserted below the middle of the tube of the corolla glandular-hairy in their lower half, upper part and the style nearly glabrous, stigma 2-lobed yellow. *E. B. t.* 568.

Clover-fields and bushy places in a light gravelly soil, on *Centaurea Scabiosa*, in several parts of England. γ . 6—8. — Taller and yellower than all the preceding. *Flowers* with their upper lip lobed. “*Stamens* inserted above the third part of the tube of the cor., but below its middle.”

5. *O. Picridis* F. W. Schultz (*Picris B.*); stem simple, sepals 1-nerved entire or in front 2—3-nerved, gradually attenuated into as many subulate points longer than the tube of the corolla, corolla tubular ventricose at the base curved at the apex nearly straight at the back, leaves denticulate wavy, upper nearly undivided its sides straight, lower of 3 roundish rather unequal lobes middle one the largest, stamens inserted below the middle of the tube hairy on the lower half within, style glandular-hairy below in front and on its upper half, lobes of the stigma (purple) nearly distinct close. *E. B. S. t.* 2956.

On the roots of *Picris hieracioides*. Near Comberton, Cambridgeshire; Giltar Head, Pembrokeshire; Rose Hall Green, Isle of Wight. \odot . 6, 7. — This and the three next are probably mere varieties, the characters assigned by authors being very unsatisfactory and somewhat contradictory; but from not having an opportunity of contrasting them in a living state, we yield to the opinion of others. Dr. Bromfield however was inclined to unite the present species with *O. minor*, from which it chiefly differs by the sepals, while he considered *O. Hederæ* to be distinct.

6. *O. minor* Sutt. (*lesser B.*); stem simple, sepals many-nerved ovate below suddenly contracted into 1—2 subulate points as long or longer than the tube of the corolla, corolla tubular curved, limb obtusely toothed veined wavy, upper lip more or less emarginate its sides straight, lower of 3 roundish nearly equal lobes, stamens inserted below the middle of the tube glabrous more or less hairy below, style nearly glabrous or with scattered hairs in front, lobes of the stigma (purple) nearly distinct close. *E. B. t.* 422.

Clover-fields, abundant in Norfolk, Kent, Surrey, Hants, Brecknockshire, &c., “parasitical on a variety of plants of very different natural orders, but most frequently on the roots of *Trifolium pratense*.” *Bromf.* \odot . 6—10. — Dr. Bromfield well observed that the hairiness of the stamens varies exceedingly, and it is to be feared that the style does so likewise throughout the whole genus.

7. *O. amethýstea* Thuill. (*bluish B.*); stem simple, sepals 3—9-nerved ovate below suddenly contracted into 1—2 subulate points, corolla tubular bent suddenly near the base and curved forwards then straight, lips unequally acutely denticulate wavy with branched veins, upper concave emarginate or 4-lobed, lobes of lower lip unequal middle one the larger, stamens inserted in the curvature of the corolla hairy at the base within glabrous above the middle, style nearly glabrous, lobes of stigma (purple) divaricate. *Hore* in *Phytol.* ii. p. 239. *O. Eryngii* Duby.

Parasitical upon *Daucus maritimus*, at Whitsand Bay, near Plymouth. ☉ ? (*Hore*) or ♀ (*Reuter*). 7.—We have not seen specimens, and have taken our character from Mr. Hore's description, between which and that by Reuter there are some points of difference; and on the Continent the plant seems confined to *Eryngium campestre* and *maritimum*. We fear it is too closely allied to *O. minor*, from which it appears only to differ by the curvature of the corolla, and the divaricate lobes of the stigma. Mr. Borrer (in the Bot. Gazette, ii. p. 96) states that Mr. Hore considered living plants of the true *O. minor* from Sussex to be identical with his plant.

8. *O. Hédera* Duby (*Ivy B.*); stem simple, sepals 1-nerved ovate below suddenly contracted into 1—2 subulate points nearly as long as or longer than the tube of the corolla, corolla tubular curved, limb denticulate wavy, upper lip 2-lobed its sides straight, lower of 3 roundish nearly equal lobes, middle lobe rather the longest, stamens inserted above the base of the corolla glabrous with a few scattered hairs on the lower half, style glabrous downy or with a few hairs on the upper part, lobes of the stigma (yellow) cohering to near the middle. *O. barbata* Bab. in *E. B. S.* t. 2859.

Parasitical upon ivy in the south and west of England and Wales, Leixlip and Muckruss Abbey, Ireland. ♀. 6—8.—M. Reuter describes the insertion of the stamens to be only a little below the middle: we find them much nearer the base; so that this character may vary in different specimens. This is best and chiefly distinguished from the last two by its yellow stigma cleft only two thirds down instead of to the base.

** *Bractes* 3 under each flower. *Sepals* 4—5, all united at the base into a tubular calyx. *Anthers* glabrous or woolly only on the suture. *Valves of capsule* separated at the apex. *Trionychion*.

9. *O. arenária* Bork. (*Sand B.*); stem simple, calyx 5-toothed, teeth triangular subulate shorter than the tube of the corolla, corolla tubular nearly straight, middle of the tube compressed at the back, throat slightly inflated, upper lip cloven, lobes of the lips obtuse reflexed at the margin, suture of the anthers hairy, style glandular-downy, stigma scarcely 2-lobed. *Phe-lipæa* Walt.: *Reuter*.

Parasitical on the roots of *Achillea Millefolium* and probably other allied genera, in the Channel Islands. 4. 7, 8.—Mr. Bentham says the Jersey plant is *O. cærulea*; we have seen no specimen.

10. *O. cærulea* Vill. (*purple B.*); stem simple, calyx with 5 lanceolate acute teeth shorter than the tube of the corolla, corolla tubular curved in front, middle of the tube compressed, upper lip of the corolla cloven, lobes of the lips acute with reflexed margins, anthers glabrous, style glandular-downy, stigma scarcely 2-lobed white. *E. B. t.* 423.

Grassy pastures near the sea, rare; Herts; Isle of Wight; Chesham; Norfolk. 4. 6—8.—More inclined to purplish-blue than any of the preceding.

11. *O. ramósa* L. (*branched B.*); stem branched, calyx with 4 triangular ovate acuminate teeth, corolla tubular-infundibuliform, upper lip deeply cloven, all the lobes rounded nearly equal, stamens pubescent at the base, anthers glabrous or slightly ciliate, style sparingly glandular. *E. B. t.* 184.

On hemp-roots, very rare; occasionally found in Norfolk and Suffolk. Jersey. Sark. ☉. 7—9.

2. LATHRÆ'A Linn. Tooth-wort.

Cal. campanulate, equally 4-cleft. *Cor.* tubular, 2-lipped: the upper *lip* concave, entire; lower 3-cleft. *Germen* with a depressed *gland* at the base.—Plants *leafless, coloured*.—Name: *λαθραιος*, *hid* or *concealed*; the plant growing much concealed by the earth or dead leaves.

1. *L. squamária* L. (*greater T.*); stem simple, flowers pendulous in one-sided racemes, lower lip of the corolla 3-cleft. *E. B. t.* 50.

Woods and coppices, apparently parasitical on the roots of hazels, elms, and other trees, in various parts of England, Scotland, and Ireland. 4. 3—5.—Branching from the very base. Whole plant succulent, with many fleshy, tooth-like scales. *Bractæas* broadly ovate or lanceolate. *Flowers* purplish.

ORD. LXII. SCROPHULARIACEÆ Juss.

Calyx 4—5-lobed, persistent. *Corolla* monopetalous, generally irregular, deciduous, with an imbricative aestivation. *Stamens* 4, didynamous, rarely equal, sometimes 2 or 5. *Style* 1. *Stigma* 2-lobed, rarely undivided. *Capsule* (very seldom fleshy) 2-celled, 2—4-valved (septicidal or loculicidal, often septifragal), or opening by pores; the valves entire or bifid; dissepiment parallel or opposite to the valves. *Receptacle* of the seeds central, united to the dissepiment, or eventually separating, entire or splitting into 2 or 4. *Seeds* few or numerous, ascending. *Embryo* straight or slightly curved, homotropical, enclosed in a fleshy *albumen*. *Radicle* inferior

pointing to the *hilum*. — Herbs, sometimes Shrubs usually with opposite leaves. In this order are many medicinal plants, as the *hedge-hyssop* (*Gratiola*), the *foxglove*, &c.

A. *Stamens* 2.

1. VERONICA.

B. *Stamens* 4, *didynamous* or *equal*.

* *Calyx* with 4 teeth or divisions.

2. BARTSIA. Upper lip of cor. entire or emarginate, arched, not compressed laterally.

3. EUPHRASIA. Upper lip of cor. broad bifid, not compressed laterally.

4. RHINANTHUS. Upper lip of cor. compressed laterally. Anthers obtuse. *Calyx* inflated.

5. MELAMPYRUM. Upper lip of cor. compressed laterally. Anthers obtuse. *Calyx* tubular.

** *Cal.* with 5 teeth or divisions, or 2—3-lobed.

6. PEDICULARIS. *Cal.* inflated, 5-toothed (or 2—3-lobed), teeth sometimes leafy. Cor. ringent, open at the throat. Upper lip compressed.

6^a. MIMULUS. *Cal.* prismatical, 5-toothed. Cor. ringent, upper lip folded back at the sides, not compressed.

7. SCROPHULARIA. *Cal.* 5-lobed or 5-cleft. Cor. nearly globose, unequal.

8. DIGITALIS. *Cal.* 5-partite. Cor. campanulate, unequal.

9. ANTIRRHINUM. *Cal.* 5-partite. Cor. personate, gibbous at the base.

10. LINARIA. *Cal.* 5-partite. Cor. personate, spurred at the base.

11. LIMOSELLA. *Cal.* 5-cleft. Cor. campanulate equal. Caps. 1-celled.

12. SIBTHORPIA. *Cal.* 5-sepaled. Cor. rotate, segments unequal. Caps. 2-celled, loculicidal.

C. *Stamens* 5.

13. VERBASCUM. *Cal.* 5-sepaled. Cor. rotate, segments unequal. Caps. 2-celled, septicidal.

A. *Stamens* 2. (Gen. 1.)

1. VERONICA Linn. Speedwell.

Cor. 4-cleft, rotate, lower segment narrower. *Stam.* 2. *Caps.* 2-celled. — Name first introduced into botany in the middle ages, supposed by some to be the same as *bernice* or *beronice*; and by others to be derived from *ἡρα εἰκων*, the *sacred picture*, the flowers (like St. Veronica's handkerchief) being imagined to bear a representation of the countenance of our Saviour: scarcely from the Persic¹, *viru*, *remembrance*, and *niku*, *good*.

* *Root* perennial. *Spikes* or *racemes* terminal.

† *Tube* of the corolla longer than its own diameter.

1. V. *spicāta* L. (*spiked S.*); raceme spicate elongate dense, leaves pubescent ovate or lanceolate crenato-serrate entire towards the apex, the lower ones broader obtuse stalked, stem

¹ Certainly not Arabic, as stated in *Notes and Queries*, vol. ix. p. 537.

ascending branched only at the very base, capsule ovate emarginate with a long style. — *α*. lower leaves oblong wedge-shaped at the base. *E. B. t. 2.* — *β*. lower leaves ovate rounded or subcordate at the base. *V. hybrida L.: E. B. t. 673.*

Rare. In dry chalky pastures about Newmarket and Bury. — *β*. in Lancashire and in Wales. *¶. 7, 8.*

†† *Tube of the corolla very short. Seeds flat.*

2. *V. serpyllifolia L. (Thyme-leaved S.)*; raceme somewhat spiked many-flowered, leaves broadly ovate or elliptical very obtuse slightly crenate, capsules broadly obcordate, style long persistent. — *α*. racemes elongate. *E. B. t. 1075.* — *β. alpina*; stem prostrate often rooting, racemes short. *V. humifusa Dicks.*

Pastures and road-sides, abundant. — *β*. on high mountains. *¶. 5, 6.* — The *var. β.* is a singular and very beautiful one, and is often mistaken for *V. alpina*. In both, the *stems*, and sometimes the *leaves*, are more or less pubescent.

3. *V. alpina L. (alpine S.)*; raceme corymbose few-flowered, leaves elliptic-ovate toothed or entire, lower ones smaller, raceme hairy, hairs spreading not glandular, capsule oblong-ovovate notched, style very short persistent. *E. B. t. 484.*

Near the summits of the Highland mountains rare. *¶. 7, 8.* — Stem about 4 inches high, turning black when dry. Best distinguished from all the varieties of *V. serpyllifolia* by its more upright growth, larger and more acute leaves; by the fewer, denser, and brighter blue flowers, which are more hairy, especially about the calyx and bracteas; and by the obovate capsule with its very short style.

4. *V. saxatilis L. (blue Rock S.)*; racemes lax few-flowered corymbose pubescent, the hairs crisped not glandular, leaves elliptical suberrate, stem spreading, capsule ovate very slightly emarginate its valves bifid. *E. B. t. 1027.*

On perpendicular exposed rocks in Scotland, rare: Breadalbane and Clova mountains. *¶. 7.* — Stems slender, procumbent, woody, much branched. Leaves glabrous, bright green, when dry almost black, but semipellucid, thin, and distinctly veiny. Flowers large of a most brilliant blue, in corymbs. What is usually known under this name in Switzerland and the Pyrenees is a variety of the next; if indeed, as Mr. Benthams suggests, the two species are distinct; there is no difference in the capsule.

5. *V. *fruticulosa L. (flesh-coloured S.)*; raceme many-flowered glandular-pubescent, leaves elliptic-lanceolate suberrate coriaceous, stem ascending woody branched at the base, capsule elliptical very slightly emarginate its valves bifid. *E. B. t. 1028.*

On Ben Cruachan, Argyleshire: *Dr. Walker.* Ben Lawers: *R. Brown, Esq. ¶. 7.* — No one, except those just mentioned, has ever

detected this plant truly wild in the British dominions; nor have we been able to see a native specimen.

** *Root perennial. Racemes axillary.*

6. *V. scutellata* L. (*Marsh S.*); racemes alternate, pedicels divaricating reflexed in fruit, leaves sessile linear somewhat toothed, capsule of 2 flattened orbicular membranous lobes, stem nearly erect. *E. B. t.* 782.

Wet places and sides of ditches. γ . 7, 8.—*Stem* usually glabrous, sometimes hairy. *Racemes* nearly opposite. *Flowers* flesh-coloured with darker bluish veins.

7. *V. Anagallis* L. (*Water S.*); racemes opposite, leaves sessile lanceolate serrate, capsule elliptical slightly emarginate, stem erect. *E. B. t.* 781.

Ditches and watery places, less frequent in Scotland than in England. γ . 7, 8.—Intermediate in appearance between *V. scutellata* and *V. Beccabunga*, yet abundantly distinct from both. *Stems* succulent, a foot or more high. *Leaves* varying somewhat in width. *Racemes* long, many-flowered. *Pedicels* short, never reflexed. *Flowers* bluish or inclining to purple.

8. *V. Beccabunga* L. (*Brooklime*); racemes opposite, leaves stalked elliptical obtuse subserrate glabrous, stem procumbent at the base and rooting, capsule roundish tumid slightly notched. — α . bracteas shorter than the pedicels, flowers bright blue. *E. B. t.* 655.— β . bracteas longer than the pedicels, flowers pink or flesh coloured. *V. limosa* Lej.

Ditches and water-courses, frequent.— β . Dalkeith. γ . 5—9.—Whole plant glabrous and very succulent. *Racemes* many-flowered.

9. *V. officinalis* L. (*common S.*); more or less pubescent, racemes spicate, leaves shortly stalked ovate serrate, stem procumbent creeping, capsule obovate triangular truncate or with a wide shallow notch.— α . leaves broadly ovate rough with pubescence, stem very downy. *E. B. t.* 765.— β . nearly glabrous.— γ . small, leaves ovato-lanceolate, capsule broadly obovate entire (abortive). *V. hirsuta* Hopk.: *E. B. S. t.* 2673.

Abundant in woods and pastures, especially in dry situations.— β . on mountains in Scotland and Ireland.— γ . dry heaths in Ayrshire. γ . 5—7.—A very variable plant, especially in size. *Leaves* astringent and bitter; hence sometimes used medicinally, and made into tea.

10. *V. montana* L. (*Mountain S.*); racemes lax few-flowered, leaves cordate-ovate petiolate serrate, stem hairy all round, capsule orbicular notched at the apex and base flat membranous glabrous ciliate much larger than the calyx. *E. B. t.* 766.

Moist woods, not unfrequent. γ . 4—7.—*Stem* a foot and more long, weak, trailing. *Leaves* large, on stalks about equal to them in

length. Capsules large, quite flat, and resembling those of a *Biscutella*, veiny, their edges denticulate and slightly ciliate.

11. *V. Chamædrys* L. (*Germander S.*); racemes elongate many-flowered, leaves cordate-ovate nearly sessile inciso-serrate, stem bifariously hairy, capsule flat obcordate deeply notched ciliate shorter than the calyx. *E. B.* t. 623.

Woods, pastures, and hedge-banks, frequent. 4. 5, 6. — Stem procumbent, as in the last species, having two opposite hairy lines, and these lines taking different sides above and below each pair of leaves, or decussate. Leaves wrinkled, sometimes deeply cut. Flowers large, numerous, very bright blue, greeting us at an early season of the year, and rendering the plant a general favourite; supposed by some to be the true *Forget-me-not*.

*** Root annual.

† Flowers axillary, solitary (the floral leaves being similar to the cauline ones). Pedicels recurved. Seeds concave on the one side.

12. *V. hederifolia* L. (*Ivy-leaved S.*); leaves all petiolate cordate with 5—7 large teeth or lobes, segments of the calyx cordate ciliate, capsule of two turgid lobes, seeds 2—4, stem procumbent. *E. B.* t. 784.

Fields and hedge-banks, common. ☉. 3—8. — Stem weak. Leaves rather fleshy, slightly hairy, the upper young leaves alone sessile or nearly so, the terminal tooth or lobe the largest. Peduncles longer than the leaves, recurved when bearing fruit. Ovary 4-ovuled. Caps. of two rounded glabrous lobes, each lobe having 2 (sometimes only 1) large, black, transversely wrinkled, oval, gibbous seeds, which are cup-shaped on the under side.

13. *V. agræstis* L. (*green procumbent Field S.*); leaves all petiolate cordate-ovate inciso-serrate about as long as the flower-stalks, segments of the calyx somewhat ovate or oblong, stem procumbent, capsule broadly suborbicular of 2 turgid keeled approximate lobes, cells 6—10-seeded. — α . sepals oblong obtuse, lower part of the corolla whitish. *Borr.* in *E. B. S.* t. 2603. — β . sepals ovate acute, petals wholly blue. *E. B.* t. 783. *V. polita* Fries.

Fields and waste places, abundant. ☉. 4—9. — Prostrate. Stems 3—4 inches long, slightly hairy. Fruit of two round tumid lobes, much smaller than the calyx. Seeds large, cupped. *V. agræstis*, *V. polita*, and *V. opaca* Fries (with spathulate sepals) agree in so many points, and differ in so few, and these of a variable nature in the genus, that we agree with Mr. Bentham that they form but one species.

14. *V. * Buxbaumii* Ten. (*Buxbaum's S.*); leaves all petiolate cordate-ovate inciso-serrate shorter than the flower-stalks, segments of the calyx lanceolate acute when in fruit much divaricate, stem procumbent, capsule obcordate-triangular of two

turgid divaricate lobes which are compressed upwards and sharply keeled, cells 8—12-seeded. *E. B. S. t.* 2769.

Fields and cultivated places. Pretty frequent in England and middle and south of Scotland, possibly introduced with clover and other seeds. ☉. 4—9.—This plant is distinguished from *V. agrestis* by its larger size, and greater hairiness, the divaricate lobes of the capsule, which are compressed upwards and sharply carinate, and the larger blue corolla, rivalling in size and beauty that of *V. Chamædrys*.

†† *Flowers spicate or racemose (the upper floral leaves becoming gradually much smaller than the cauline ones). Pedicels erect or nearly so.*

15. *V. arvënsis* L. (*Wall S.*); leaves cordate-ovate serrate the lower ones petiolate, the upper or bractæas sessile lanceolate quite entire longer than the flowers, pedicels shorter than the calyx, capsules broadly obcordate compressed emarginate with roundish ciliate lobes, seeds 12—14 compressed flat on the one side, stem ascending. *E. B. t.* 734.

Fields and walls, plentiful. ☉. 4—7.—Very different from the last three, especially in its inflorescence, which, if the upper leaves be considered bractæas, as they really are (for they differ both in size and shape from the cauline ones), is truly racemose or subspicate. The same may be said of the two next species, and of some Continental ones, especially *V. acinifolia*.

16. *V. vérna* L. (*vernal S.*); leaves inciso-pinnatifid, the upper ones or bractæas lanceolate entire, pedicels shorter than the calyx, capsule broadly obcordate compressed emarginate with roundish ciliate lobes, seeds 12—14 thin flat. *E. B. t.* 25.

Very rare; in sandy heaths, about Thetford, Bury, and Mildenhall, Suffolk. ☉. 4, 5.—A very small upright, scarcely branching plant, allied to *V. arvënsis*.

17. *V. triphýllos* L. (*blunt-fingered S.*); leaves broadly ovate incise lowermost ones petiolate, upper or bractæas sessile digitate the segments obtuse, pedicels longer than the calyx, capsules obcordate compressed with roundish ciliate lobes, seeds many concave on the one side. *E. B. t.* 26.

Very rare; in sandy fields, about Thetford, Bury, and Mildenhall, Suffolk. Acomb, near York. ☉. 4.—*Stem* 3—4 inches high, with spreading branches. *Flowers* a very deep blue, the lowermost often on much elongated pedicels.

*B. Stamens 4, and usually didynamous (in British species).
(Gen. 2—12.)*

2. BÁRTSIA Linn. Bartsia.

Cal. tubular, mostly coloured, 4-cleft. *Cor.* ringent with a contracted orifice; upper *lip* arched, entire or emarginate;

lower one in 3 nearly equal lobes. *Anthers* mostly hairy, cells mucronate at the base. *Caps.* ovate-oblong, compressed, with 2 cells and many *seeds*.—Named in honour of *John Bartsch*, a Prussian botanist, and friend of Linnæus, who died at Surinam.¹

1. *B. alpina* L. (*alpine B.*); stem erect hairy, leaves opposite ovate obtusely serrate, upper ones cordato-amplexicaul, flowers in a terminal short leafy spike, anthers hairy. *E. B.* t. 361.

Rocky alpine pastures; rare. Near Orton, Westmoreland; Middleton, Teesdale, on the Yorkshire and Durham sides of the river. Meal-ghyrdhy, Meal-cuachlar, and Ben Lawers, in Breadalbane; Scotland. *Æ.* 6—8.—*Stems* about a span high, simple, several from the same root. *Upper leaves* or *bracteas* often tinged with purple. *Flowers* large, deep purplish-blue, downy; *lips* of equal length; lower with very short lobes.

2. *B. viscosa* L. (*yellow viscid B.*); leaves lanceolate incisoserrate, upper ones alternate, flowers solitary axillary distant, lower lip large, anthers hairy. *E. B.* t. 1045. *Eufragia Griseb.*

Pastures, in many places in the west of England and Wales, and south-west of Scotland and south of Ireland. Jersey. *☉.* 6—10.—*Flowers* yellow, handsome; lower lip longer than the upper one.

3. *B. Odontites* Huds. (*red B.*); leaves linear-lanceolate remotely serrate, upper ones (or bracteas) alternate, flowers in unilateral racemes, anthers nearly glabrous, stem branched erect scabrous pubescent.—*α.* leaves attenuate at the base, calyx-segments lanceolate as long as the tube, filaments and stigma hairy, capsule oblong. *E. B.* t. 1415.—*β.* leaves broader at the base, calyx-segments broadly triangular one half the length of the tube, filaments and stigma nearly glabrous, capsule broadly oval almost rounded.—*Odontites rotundata Ball* in *Ann. Nat. Hist.* 2nd ser. iv. p. 30.

Corn-fields and waste places, frequent.—*β.* Sussex and Cambridgeshire. *☉.* 6—8.—*Racemes* many, long, erect. *Flowers* reddish-purple, pubescent; upper lip longer than the lower one. *Anthers* connected together by a few hairs, and having a few glands or clavate hairs along the connectivum at the back, otherwise glabrous. We have seen no specimens of *var. β.*, but it does not seem to differ in any essential points from the more common forms.

¹ Mr. Bentham and others have divided this genus into several, which we do not consider necessary to adopt in a local flora, where we have only one representative of each: they are—

1. BARTSIA. Seeds numerous, large, transverse, longitudinally ribbed or winged at the back. (*B. alpina.*)
2. EUFRAGIA. Seeds very numerous and minute, erect, slightly angular, obscurely striate. (*B. viscosa.*)
3. ODONTITES. Seeds numerous, somewhat angular, longitudinally furrowed, pendulous. (*B. Odontites.*)

The last has been united to *Euphrasia* by Mr Babington.

3. EUPHRÁSIA Linn. Eye-bright.

Cal. tubular, 4-cleft. Upper *lip* of the *cor.* 2-lobed, the lobes broad; lower one of 3 nearly equal lobes. Cells of the *anthers* mucronate at the base. *Caps.* ovate oblong, compressed, 2-celled, many-seeded. *Seeds* pendulous, longitudinally furrowed. — Named from *εὐφραίνω*, to *delight*; in allusion to the gaiety of its flowers.

1. *E. officinális* L. (*common E.*); leaves ovate deeply toothed, corolla glabrous, lobes of the lower lip emarginate, of the upper spreading. *E. B. t.* 1416.

Pastures in the plains and on the mountains, abundant. ☉. 5—9. — *Stem* varying from 1 inch, with often only a single flower, to 6 and 8 inches, in the Highland pastures, where it becomes very much branched. *Flowers* axillary, but crowded at the extremities of its branches, white or reddish, streaked with purple. Mr. Babington supposes that we may have two species in this country: one, the true *E. officinális* L. which has glandular down and seeds ovate and grayish; the other, *E. nemorosa* Pers., without glandular down, and with seeds fusiform and yellowish; but, as Mr. Bentham justly remarks, “many forms occur in which these characters are differently combined, or pass gradually into each other.”

4. RHINÁNTHUS Linn. Yellow-rattle.

Cal. inflated, 4-toothed. Upper *lip* of the *cor.* compressed laterally, entire, furnished on both sides below the apex with a straight tooth-like appendage or lobe; lower one plane, 3-lobed. *Ovary* with many *ovules*. *Caps.* of 2 cells, obtuse, compressed. *Seeds* imbricate, flat and usually margined. — Named from *ῥῖν*, a *nose*, and *ἄνθος*, a *flower*; in allusion to the beaked upper lip of the corolla, which is very remarkable in the *R. Elephas*.

1. *R. Crista-Gállí* L. (*common Y.*); leaves oblong-lanceolate serrate, flowers in lax spikes, calyx glabrous, appendages of the upper lip of the corolla short roundish, bracteas ovate. *E. B. t.* 657. *R. glaber* Lam. *R. minor* Ehrh.

Meadows and pastures, abundant. ☉. 5—7. — *Stem* 1—2 ft. high, glabrous, often much branched and more or less spotted with purple. *Leaves* veiny, somewhat blunt or usually acute. *Flowers* axillary in the upper leaves or *bracteas*, and hence loosely spiked. The *appendages* of the upper lip of the *corolla* are broader than long, bluish. *Bracteas* green throughout, acute, but not with an elongated point. When the fruit is ripe, the *seeds* rattle in the husky capsule, and indicate to the Swedish peasantry the season for gathering in their hay.

2. *R. angustifólius* Gmel. (*large bushy Y.*); leaves linear lanceolate, upper ones especially acuminate, flowers in crowded spikes, calyx glabrous, appendages of the upper lip of the co-

rolla ovate or oblong, bracteas ovate acuminate. *R. major* Sm.: *E. B. S. t.* 2737 (not Ehrh.).

Corn-fields in the north of England. ☉. 7, 8.—Mr. Backhouse observes that the present plant has denser and more bushy *spikes* than *R. Crista-Galli*, and yellowish *bracteas*, each terminated by an elongated green point. The upper leaves are much acuminate from a lanceolate base. The appendages of the upper lip of the *corolla* are wedge-shaped, purple, usually longer than broad; the *germen* is narrower, and more tumid. The *seeds* are thick at the edge, with a membranous margin, which is variable in breadth, sometimes almost wanting. *R. major* Ehrh. (*R. hirsutus* Lam. or *R. villosus* Pers.) has a hairy calyx, and has not yet been found in this country.

5. MELAMPÝRUM. Linn. Cow-wheat.

Cal. tubular, 4-toothed. Upper *lip* of the *cor.* laterally compressed, turned back at the margin; lower *lip* trifid. *Ovary* with 2 superposed *ovules* in each cell. *Caps.* oblong, 2-celled, obliquely acuminate, opening on one side, *Cells* 1—2-seeded. *Seeds* oblong, even (not striate), gibbous at the base.—Named from μέλας, *black*, and πῦρον, *wheat*. Its seeds resemble grains of wheat, and are said, when mixed with flour, to make the bread black.

1. *M. cristátum* L. (*crested C.*); spikes densely imbricate 4-sided, bracteas cordate acuminate finely ciliato-dentate. *E. B. t.* 41.

Woods, thickets, and sometimes in corn-fields, chiefly in Norfolk, Cambridgeshire, Bedfordshire, and Huntingdonshire. ☉. 7.—A beautiful plant, as is the following. *Leaves* lanceolate, acuminate, entire. *Bracteas* rose-coloured at the base. *Flowers* yellow, purple within the upper lip, solitary in the axil of each bractea or floral-leaf, as in all the rest of the genus.

2. *M. arvénse* L. (*purple C.*); spikes oblong lax bracteas ovato-lanceolate attenuate pinnatifid with subulate segments, teeth of the calyx much longer than the tube, lips of the corolla closed. *E. B. t.* 53.

Corn-fields and dry gravelly banks, rare. Near Norwich. Isle of Wight. ☉. 6—8.—Spikes of *flowers* much larger than in the preceding, and exceedingly handsome, from the bright varied colours, yellow, purple, rose-colour, and green, of the blossoms and *bracteas*: the latter have elevated glandular points beneath. *Cal.* hispid, as long as the tube of the *corolla*.

3. *M. praténse* L. (*common yellow C.*); flowers axillary secund, leaves in distant pairs, corolla 4 times as long as the calyx closed, the lower lip straight.—*α.* leaves glabrous, upper bracteas 1—2-toothed at the base. *E. B. t.* 113.—*β.* smaller and somewhat succulent, leaves glabrous, bracteas quite entire. *M. montanum* *Johnst. Fl. of Berw.*—*γ.* leaves hispid, bracteas with diverging and declining teeth at the base.

Groves and thickets (not in meadows, as the name would imply), frequent.— β . Mountains.— γ . Banks of the Wye below Monmouth. West of Ireland. \odot . 5—8.—*Stem* 1 ft. or more high, slender, with straggling opposite branches. *Flowers* large, pale yellow: lower lip nearly straight (not deflexed), and the palate is raised so as to close the mouth of the tube.

4. *M. sylvaticum* L. (*small-flowered yellow C.*); flowers axillary secund, leaves in distant pairs, corolla scarcely twice as long as the calyx open, the lips equal in length, lower one deflexed, bractæas quite entire. *E. B. t.* 804.

Alpine woods. Rare in the north of England. More general, but very local in Scotland; in several parts of Perthshire; Auchendrane, woods on the Doon, Craigs of Ness, Ayrshire; &c. \odot . 7.—*Stem* 1 ft. high. *Bractæas* always entire. *Cor.* deep yellow, very small, quite unlike that of the preceding species.

6. PEDICULÁRIS Linn. Louse-wort.

Cal. inflated, 5-cleft, or unequally 2—3-lobed, jagged, somewhat leafy. Upper *lip* of the *cor.* laterally compressed, arched; lower one plane, 3-lobed. *Ovary* with many ovules. *Caps.* oblique, acute, compressed, 2-celled. *Seeds* angular.—Name derived from its supposed property of producing the lousy disease in sheep that feed upon it, a malady which rather arises from the wet pastures where such plants grow.

1. *P. palústris* L. (*Marsh L.*); stem solitary branched upwards erect, calyx broadly ovate hairy ribbed with crenate nearly equal lobes. *E. B. t.* 399.

Wet and marshy pastures. \odot or \mathcal{A} ? 5—9.—*Stem* 1 ft. high, with many lateral branches. *Leaves* some or all of them opposite, pinnate; *pinnæ* ovate, almost pinnatifid. *Cal.* slightly hairy on the outside, nearly glabrous within, not inflated, spotted. *Cor.* crimson; upper lip with a projecting tooth on each side below the middle, truncate and with a tooth at the apex on each side; lower one fringed. The two anterior *stamens* hairy to near the base, hairs moniliform: two posterior ones glabrous.

2. *P. sylvática* L. (*Pasture L.*); stem branched from the base and spreading, calyx oblong angular glabrous in 5 unequal crenate and almost leafy segments. *E. B. t.* 400.

Moist pastures and heaths, common. \mathcal{A} . 4—7.—*Stems* 3—5 inches long. *Leaves* alternate, lower ones pinnatifid, the rest pinnate with deeply serrate *pinnæ*. *Cal.* quite glabrous on the outside, woolly within at the mouth, inflated, reticulated with green veins. *Cor.* rose-coloured (or white); upper lip without any projecting tooth about its middle, truncate and with a tooth at the apex on each side; lower one not fringed. The two anterior *stamens* have many moniliform hairs near the apex: two posterior ones glabrous or scabrous.

[*Mimulus guttatus* D C., perhaps a variety of *M. luteus* Willd., is now naturalized in many boggy places: it is a native of North-west America. The true *M. luteus* (*M. rivularis* Nutt.) from Chili also occurs, but more rarely.]

7. SCROPHULÁRIA Linn. Figwort.

Cal. 5-lobed (or in *S. vernalis* deeply 5-cleft). *Cor.* subglobose, its *limb* contracted with 2 short *lips*; the upper with 2 straight lobes, and frequently a small *scale* or abortive stamen within it; the lower 3-lobed, the two lateral lobes straight, middle one decurved. *Caps.* 2-celled, 2-valved, septicidal, the margins of the valves turned inwards.—Named from the *scrofula*; the roots of some species resembling scrofulous tumours, which they were therefore in the dark ages of medical knowledge supposed to cure.

* *Calyx* with 5 rounded lobes. *Cor.* purplish, the two upper lobes longer than the two lateral ones: upper lip with a scale.

1. *S. nodósa* L. (*knotted F.*); leaves cordato-triangular acute glabrous doubly and acutely serrate, lower serratures largest, stem with 4 acute angles, cymes lax, bracteas small lanceolate acute, sepals with a narrow membranous margin, scale of upper lip transversely oblong slightly notched. *E. B. t.* 1544.

Woods and moist grounds, frequent. *fl.* 6—8.—*Rhizome* large, thick, and knotty. *Stem* 2—3 ft. high. *Flowers* greenish purple.

2. *S. Ehrhárti* C. A. Stev. (*Ehrhart's F.*); leaves ovato-lanceolate acute subcordate glabrous sharply serrate, lower serratures smaller, bracteas leaf-like, petioles winged, stem 4-winged, cymes lax 4—8-flowered, sepals with a broad membranous margin, scale of upper lip bifid with diverging lobes, capsule obtuse. *E. B. S. t.* 2875.

Wet places. Wilmington, Sussex; Primrose Hill, Middlesex; Aymestry, Herefordshire; Preston, Lancashire; Settle, Yorkshire. Berwick-upon-Tweed; Cramond Bridge and Pentland Hills, near Edinburgh. *fl.* 7—9.—*Stem* 2—4 ft. high, decidedly winged at the angles, on which account the plant had been long supposed, both in Germany and Scotland, to be *S. aquatica*, although much more allied to *S. nodosa*.

3. *S. aquática* L. (*Water F.*); glabrous, leaves crenato-serrate cordate-oblong obtuse, petioles winged, stem 4-winged, cymes dense corymbose 8—15-flowered, bracteas linear obtuse, sepals with a broad membranous margin, scale of upper lip roundish uniform entire, capsule pointed. *E. B. t.* 854. *S. Balbisii* Hornem.

Sides of rivers, and in wet places. *fl.* 6—9.—*Stem* 3—4 ft. high. *Panicles* terminal, bracteated, with remote branches. *Flowers* dark purple, occasionally white.

4. *S. Scorodónia* L. (*Balm-leaved F.*); downy, leaves cordato-

triangular with large double serratures, stem bluntly 4-angled, cymes lax few-flowered, bractæas leaf-like, sepals with a membranous margin, scale of upper lip roundish entire. *E. B.* t. 2209.

Moist places, only in the extreme south-west of England, and at Tralee, in Ireland. Jersey. 4. 7.—Distinguished from all the preceding by being downy, and by its wrinkled *leaves*, which have large teeth, or serratures, and these are again serrate: it resembles *S. Ehrharti* in the leafy *bractæas* which accompany the *panicle*. *Flowers* dull purple.

* * *Calyx* with 5 deep, acute segments. *Cor.* yellow; the two upper segments of the *cor.* about equal to the two lateral ones; scale of the upper lip wanting.

5. *S. *vernâlis* L. (*yellow F.*); hairy, leaves broadly cordate doubly inciso-serrate acute, cymes axillary corymbose, bractæas leafy, sepals without a membranous margin, stamens protruded. *E. B.* t. 567.

Road-sides and waste places, in many parts of England and Scotland, but nowhere general, and always in doubtfully wild situations. 4. 4—6.—Very different from all the preceding, and, as Sir James E. Smith has well observed, exhibiting a great affinity with the pretty American genus *Calceolaria*. *Styles* and *stamens*, which latter arise from the base of the yellow *corolla*, protruded from its very contracted mouth.

8. DIGITALIS Linn. Foxglove or Folks-glove.

Cal. in 5 deep segments. *Cor.* campanulate, inflated beneath; *limb* obliquely 4—5-lobed, unequal. *Caps.* ovate, 2-celled, many-seeded, 2-valved, septicidal.—Name: *digitale*, the *finger of a glove*, which its flowers resemble. Hence *fox-glove* in English, and *doigts de la Vierge, gants de Notre Dame*, &c., in French; *meuran-nam-ban-sith* in Gaelic.

1. *D. purpúrea* L. (*purple F.*); sepals ovate-oblong acute 3-nerved downy, corolla obtuse scabrous externally, upper lip scarcely divided, lower one with ovate rounded segments, leaves ovato-lanceolate crenate or serrate downy. *E. B.* t. 1297.

Dry banks, pastures, walls, &c., in hilly and especially in sub-alpine and rocky countries; almost unknown in the more eastern parts of England, such as Norfolk and Suffolk. 4. 5—8.—The most stately and beautiful of our herbaceous plants; and one that has obtained great reputation as a medicine. Three to four feet high. *Leaves* large, veiny. *Spikes* very long, of numerous, drooping, purple (or rarely white) *flowers*, spotted within. Dr. Bromfield found a curious *var.* with a spurred corolla in the Isle of Wight.

9. ANTIRRHINUM Linn. Snapdragon.

Cal. 5-partite. *Cor.* personate, gibbous at the base (no evident spur); its *mouth* closed by a projecting palate. *Caps.*

2-celled, oblique, opening by 2—3 pores at the extremity.— Name. *αῖτι*, (in composition sometimes signifying) *resembling*, *ῥιν*, a nose, *muffler*, or *mask*; from the appearance of the flowers.

1. A. **május* L. (*great S.*); leaves lanceolate alternate those of the branches opposite, flowers spiked, segments of the calyx ovate obtuse much shorter than the corolla, upper lip of corolla bifid. *E. B. t.* 129.

Old walls and chalk hills, frequently the outcast of neighbouring gardens. *ϗ.* 7—9.— One to two feet high. *Flowers* very large, mostly purplish-red, but often varying to white.

2. A. *Oróntium* L. (*lesser S.*); leaves mostly alternate linear-lanceolate, spikes very few-flowered lax, segments of the calyx linear longer than the corolla. *E. B. t.* 1155.

Corn-fields, in a dry soil, in many parts, especially of the east and south of England. ☉. 7—10.— *Flowers* purple, remarkable for the great length of the *calyx-segments*, particularly after flowering.

10. LINÁRIA Tourn. Toadflax.

Cal. 5-partite. *Cor.* personate, spurred at the base; its *mouth* closed by a projecting palate. *Caps.* ventricose, 2-celled, opening by valves or teeth.— Named from *linum*, *flax*; which the leaves of some species resemble.

* *Stems and branches trailing. Pedicels axillary, elongated.*

1. L. **Cýmbalária* Mill. (*Ivy-leaved T.*); leaves cordate 5-lobed palmate-nerved alternate glabrous, stems trailing. *Antirrhinum L.*: *E. B. t.* 502.

On old walls, in many places; the outcast of gardens. *ϗ.* 5—9.— *Stem* very long, filiform. *Leaves* petioled, often purple beneath. *Flowers* small, pale blue or purplish.

2. L. *spúria* Mill. (*round-leaved Fluellen*, or *T.*); leaves ovate downy feather-nerved mostly alternate, branches trailing, peduncles hairy, corolla with a subulate curved spur. *Antirrhinum L.*: *E. B. t.* 691.

Sandy corn-fields, mostly confined to the east and south-east of England. Abundant in many parts of Norfolk and Suffolk. Bristol. ☉. 7—11.— *Flowers* small, yellowish; upper *lip* purple. *Cal.* large; segments ovato-lanceolate, the outer ones, sometimes all, cordate at the base.

3. L. *Elatine* Desf. (*sharp-pointed Fluellen*, or *T.*); leaves broadly hastate acute feather-nerved, lowermost ovate opposite, branches trailing hairy, peduncles glabrous, corolla with a subulate straight spur. *Antirrhinum L.*: *E. B. t.* 692.

Corn-fields in a dry, gravelly, or chalky soil in England and Ireland. ☉. 7—11.— Similar to the last, yet distinct, smaller in all its parts. *Sepals* lanceolate, very acute, never cordate.

** *Stems erect; ascending or diffuse.*

4. *L. répens* Ait. (*creeping pale-blue T.*); glabrous, leaves linear whorled or scattered, flowers racemose, sepals lanceolate glabrous the length of the spur but shorter than the capsule, seeds angular transversely wrinkled, stems erect. *Antirrhinum L.*; *E. B.* t. 1253. *L. striata* DC.

Chalky banks and rocky places near the sea, rare; principally in the south of England, South Wales, and Ireland. Naturalized near Culzean, Ayrshire, and Musselburgh; Scotland. γ . 7—9.—*Stems* 1 to 1½ foot high, slender, branched. *Leaves* somewhat whorled below, but there soon dying away. *Flowers* in paniced racemes, whitish or pale violet, with darker violet lines; *palate* yellow.—Between this and the next species hybrids are occasionally formed in Hants and Cornwall: those which have the seeds of the next, yellow flowers, and intermediate sepals, have been called *L. Bauhini* and *L. Italica* by British collectors. The true *L. Italica* is itself connected with *L. repens* by several intermediate forms. *L. sepium* Allm., which we admitted in the 7th edition with hesitation, proves to be, as we suspected, another hybrid; it was found near the river Bandon, Cork; the spur and gray upper lip of the corolla are streaked with pale purple lines; seeds tubercular scabrous, with three wings.

5. *L. vulgáris* Mœnch (*yellow T.*); glabrous, leaves linear-lanceolate scattered crowded, flowers racemose imbricate, sepals ovate acute glabrous shorter than the capsule or spur, seeds tubercular-scabrous surrounded by a smooth wing, stems erect. *Antirrhinum Linaria L.*; *E. B.* t. 658.

Borders of corn-fields, and in hedges, abundant. γ . 7—10.—One to two feet high, glaucous. *Flowers* large, yellow. *Rachis* and *peduncles* usually glandular-hairy, sometimes glabrous. Dr. Bromfield found a variety with broad leaves in the Isle of Wight, which appears to be the *L. speciosa* Ten. A remarkable but not very uncommon monstrosity is the "*Peloria* var." (figured in *E. B.* t. 260), having 5 spurs and 5 usually imperfect stamens.

6. *L. Pelisseriána* DC. (*upright purple T.*); glabrous erect, leaves linear upper ones alternate, lower ones verticillate, those of the sterile shoots ternate and broader, flowers at first in short racemes, pedicels as long as the bracteas, sepals linear acute twice as long as the capsule much shorter than the spur of the corolla, seeds nearly flat surrounded by a fringed wing, tubercular on one side, smooth on the other. *E. B. S.* t. 2832.

On a hill-side, growing amongst *Ulex Europæus*, between St. Peter's barracks and a water-mill near St. Onen's Pond, Jersey. \odot . 6.—*Flowering-stems* 6 inches to 1 foot high, nearly simple, one or more from each root. *Flowers* purple, with dark veins. The seeds form a beautiful microscopic object.

7. *L. *supína* Desf. (*diffuse T.*); diffuse or ascending with the inflorescence glandular-hairy but otherwise glabrous, leaves

linear blunt, upper ones alternate, lower verticillate, sepals linear or linear-spathulate shorter than the capsule or spur about as long as the corolla, seeds nearly flat surrounded by a striate wing. — *L. maritima* DC. *L. Pyrenaica* DC. *Antirrh. supinum* L.

Near Plymouth, Devon, and Poole, Dorset (supposed to have been brought with ballast from Rouen). Newcastle upon Tyne (among ballast). Hayle and St. Blazey's bay, Cornwall (perhaps also introduced). 4. 7, 8. — *Stem* much branched at the base, only a few inches high. *Flowers* at first in short racemes, yellow, the throat and spur usually with purple lines. We have not seen British specimens.

8. *L. minor* Desf. (*least T.*); leaves linear-lanceolate obtuse mostly alternate glandular-pubescent, flowers solitary axillary, pedicels three times as long as the calyx which is longer than the spur, segments of the upper lip of the corolla diverging, seeds oblong furrowed, stem erect much branched. *E. B.* t. 2014.

Sandy fields, principally in the eastern and south-eastern parts of England. Rare in Scotland: near Glasgow; Aill Water, Roxburghshire. At Sunday's well in Ireland. ☉. 5—10. — *Stems* 4—10 inches high, with purplish-yellow flowers.

[The Neapolitan *Linaria purpurea* Mill. (Bot. Mag. t. 99) is given in the *New Bot. Guide* as being found at Redland, near Bristol, by Miss Worsley. Of course it is the outcast of a garden.]

11. LIMOSÉLLA Linn. Mudwort.

Cal. campanulate, 5-cleft, equal. *Cor.* shortly 5-cleft, campanulate, equal. *Stam.* 4, nearly equal. *Anthers* 1-celled. *Stigma* capitate. *Caps.* globose, 2-valved, with a central placenta which is free above and connected below with a thin dissepiment, ultimately 1-celled. — Named from *limus*, mud; the plant growing in muddy places.

1. *L. aquática* L. (*common M.*); leaves lanceolate spathulate on long stalks, segments of the corolla oval oblong much shorter than the tube of the calyx. *E. B.* t. 357.

Muddy places, and where water has stood, in several parts of England, Scotland, and Ireland, but often overlooked on account of its small size. ☉. 7—9. — *Rhizome* creeping, filiform, throwing up tufts of glabrous leaves one or two inches long including their petiole. *Flowers* minute, peduncled, arising from the base of the leaf-stalks, resembling scapes which are shorter than the petioles. *Cor.* pale rose-coloured. *Anthers* purplish blue. *Seeds* with a furrow on the back and numerous transverse striæ.

12. SIBTHÓRPIA Linn. Sibthorpia. Money-wort.

Cal. in 4—8 deep spreading segments. *Cor.* sub-rotate, of as many segments as the calyx or with an additional one. *Stam.* as many as the segments of the corolla, or one fewer.

Anthers sagittate, 2-celled. *Stigma* dilated. *Caps* membranous, compressed, 2-celled, 2-valved, loculicidal.—Name given in honour of *Dr. Humphrey Sibthorpe*, the successor of *Dillenius* in the botanical chair at Oxford. (As here defined, the genus includes *Disandra* Linn.)

1. *S. Europæa* L. (*creeping S.*, or *Cornish M.*); hairy, leaves 7—9-lobed, pedicels very short, flowers minute 5-cleft, stamens 4, capsules broad retuse. *E. B. t.* 649.

Moist shady places, in Devonshire, Cornwall, and the Scilly Isles. By the stream running from Waldron Down, Sussex; near Nettlecombe, Somerset. Jersey and Guernsey. At Connor hill near Dingle; and near Brandon, Ireland. Side of Crinan canal, Argyleshire. 4 7, 8.—A graceful little plant, hairy, with creeping filiform stems, and alternate orbicular-reniform broadly crenate leaves. *Flowers* axillary, solitary, on short stalks; the two lowermost segments of the corolla yellowish, the three upper broader and pink.

C. *Stamens* 5. (Gen. 13.)

13. VERBASCUM Linn. Mullein.

Cal. 5-partite. *Cor.* rotate, irregular. *Stam.* 5, the three upper or all of them hairy. *Caps.* of 2 cells and 2 valves, septicidal.—Name altered from *Barbascum*, from *barba*, a beard; in allusion to the shaggy nature of its foliage.

* *Anthers* of the longer glabrous stamens more or less decurrent on one side of the filaments. *Raceme* spiked, dense, nearly sessile. *Leaves* decurrent, woolly.

1. *V. Thápsus* L. (*great M.*); stem simple, leaves all decurrent woolly on both sides, spike of flowers very dense, pedicels shorter than the calyx, corolla concave in the throat about twice as long as the calyx, 2 stamens longer glabrous their anthers very shortly decurrent. *E. B. t.* 549.

Banks and waste ground, in a light sandy, gravelly, or chalky soil. ♂. 6—8.—*Stem* nearly simple, 4—5 feet high, angular, winged. *Leaves* thick, excessively woolly, ovate or oblong. *Spike* long, cylindrical. *Flowers* handsome, golden-yellow; when dried in the sun, giving out a fatty matter used in Alsace as a cataplasm in hæmorrhoidal complaints. Three of the *stamens* with white woolly hairs; the two longer ones glabrous.

2. *V. *thapsiförme* Schrad. (*Thapsus-like M.*); stem simple, leaves decurrent woolly on both sides, raceme spiked dense, 2 stamens longer glabrous their anthers much decurrent, corolla flat about 4 times as long as the calyx. *V. thapsoides* Huds.? *V. Thapsus* Mey.: Koch.

Everywhere in Kent; *Huds.* ♂. 7, 8.—The foreign plant is closely allied to the last, but readily distinguished by the corolla and anthers of the long stamens. As to the British species it rests wholly

on Hudson's authority, and Mr. Griffith states that the *V. thapsoides* Huds. has frequently been produced in his garden by the pollen of *V. Thapsus* falling upon the stigma of *V. Lychnitis* (Bot. Guide, i. p. 169).

** *Anthers of the longer stamens more or less decurrent on one side of the filaments which are hairy on the inside. Flowers solitary, or 2—6 together. Leaves glabrous or glandular-hairy, sessile; upper ones semiamplexicaul or slightly decurrent.*

3. *V. *Blattária* L. (*Moth M.*); leaves crenate oblong glabrous, radical ones sinuate, upper ones acuminate, flowers solitary stalked remote collected into an elongated branched glandular-hairy raceme, pedicels much longer than the calyx. *E. B. t. 393.*

Banks in a gravelly soil, rare. In several places in Kent, Devonshire, and Cornwall. ♂. 6—10.—Hairs of the filaments purple.

4. *V. *virgátum* With. (*large-flowered Primrose-leaved M.*); slightly glandular-hairy except the sometimes glabrous leaves, leaves ovato-lanceolate toothed, radical ones sinuato-lyrate, pedicels 2—6 or rarely solitary mostly shorter than the calyx. *E. B. t. 550.*

Fields and by road-sides, rare. Torpoint, Cornwall; Plymouth; Surrey; Worcester; Lincoln; Wombourne, Staffordshire; Herts; Norfolk; Shropshire; Hereford; Wrexham, Denbighshire; Glamorganshire. ♂. 8.—Perhaps, as suggested by Mr. Bentham, a mere var. of the last.

*** *Anthers not decurrent on the filaments, which are equal and all woolly. Racemes branched, paniced. Leaves woolly or pulverulent especially beneath, not decurrent.*

5. *V. pulveruléntum* Vill. (*yellow hoary M.*); leaves ovate-oblong subserrate pulverulento-tomentose on both sides, lower ones oblong-elliptical attenuated into a stalk, upper ones sessile or cordato-amplexicaul, stem terete paniced above with spreading branches, filaments all woolly (with white hairs). *E. B. t. 487. V. floccosum W. et K.*

Road-sides on a gravelly or chalky soil; frequent in Norfolk, Suffolk, Surrey, and Hants. Den near Cullen, Scotland. ♂. 7.—Remarkable for the mealy down on the leaves, which is easily removed from the surface. Flowers large, handsome. "If the plant be struck suddenly and violently, the expanded corollas will in a short time fall off, and the calyx will close over the germen." (*Sm.*) There were doubts at one time about this being the plant of Villars, from hybrids being generally preserved under that name, and probably sometimes mistaken for it by Villars himself; but, as observed by Mr. Bentham, the description of Villars indicates the English plant.

6. *V. Lychnitis* L. (*white M.*); leaves crenate nearly glabrous above woolly and pulverulent beneath, lower ones elliptic-oblong

wedge-shaped stalked, upper sessile ovate-acuminate with a rounded base, stem angular and panicled with ascending branches, filaments all woolly (with white hairs). *E. B. t. 58.*

Road-sides, pastures, and fields, especially in a chalky soil. On clay-slate, near Truro. *♂. 7, 8.*—*Flowers* numerous, rather small, cream-coloured (often yellow in the Isle of Wight). *Leaves* very woolly below. *Stamens* hairy.

7. *V. nigrum* L. (*dark M.*); leaves crenate nearly glabrous or subpubescent above tomentose or pubescent beneath, lower ones cordate-oblong on long stalks, upper cordate-ovate subsessile, raceme elongated, pedicels twice as long as the calyx, sepals lanceolate-subulate, stem angular above, filaments all woolly (with bright purple hairs). *E. B. t. 59.*—*α.* leaves subglabrous above subpubescent beneath.—*β.* leaves subpubescent above downy beneath.—*γ.* leaves subpubescent above tomentose beneath.

Banks and way-sides, particularly in a gravelly or chalky soil, in the middle and south of England (only naturalized in the north of England and Scotland). *4. 6—10.*—*Leaves* nearly glabrous, dark green. *Flowers* fascicled, many together, on the almost simple long raceme. *Corolla* rather large, yellow.

[Besides the above, *V. phœniceum* L. (*V. ferrugineum* Andr.) and *V. phlomidoides* L. have been mentioned as natives, but they are plants only of a more southern clime.]

ORD. LXIII. LABIATÆ Juss.

Calyx tubular. *Corolla* monopetalous, hypogynous, mostly irregular. *Stamens* 4, mostly didynamous, 2 sometimes sterile or wanting. *Ovary* 1, deeply 4-lobed; *style* arising from between the lobes, near their base. *Stigma* 2-lobed. *Achenes* 4, enclosed in the calyx. *Seed* solitary, erect. *Embryo* erect. *Albumen* 0.—Herbs, rarely shrubs. *Leaves* opposite. *Stems* square.—An extensive and eminently natural Order, abounding in essential oil, camphor, and bitter extractive: many of the individuals are therefore employed medicinally.

A. *Stamens* 2.

1. LYCOPUS. Cal. 5-cleft. Limb of corolla nearly equal.
2. SALVIA. Cal. 2-lipped. Cor. labiate.

B. *Stamens* 4.

- I. *Stamens* diverging, nearly equal, longer than the nearly regular 4—5-cleft cor.
3. MENTHA. Tube of the cor. scarcely longer than the calyx.
- II. *Stamens* diverging, nearly equal, longer than the somewhat 2-lipped cor.
4. THYMUS. Flowers in whorls or capitate.
5. ORIGANUM. Flowers in spikes or heads, with imbricated bractæas.

III. *Stamens ascending, parallel, didynamous. Cor. irregular; upper lip short or nearly wanting, shorter than the stamens.*

6. TEUCRIUM. Cal. tubular, 5-toothed. Upper lip of cor. bipartite.

7. AJUGA. Cal. ovate, 5-cleft. Upper lip of cor. entire or emarginate.

IV. *Stamens didynamous. Cor. obviously 2-lipped; upper lip longer than the stamens.*

* *Cal. equal or oblique, not obviously 2-lipped.*

† *Cal. 5-toothed. Stamens longer than the tube of the cor.*

‡ *The two anterior or lower stamens the longest.*

8. BALLOTA. Cal. salver-shaped, 10-ribbed. Anther-cells spreading.

9. LEONURUS. Cal. tubular, 5—10-ribbed. Anther-cells nearly parallel.

10. GALEOPSIS. Cal. campanulate. Anther-cells opposite, bursting transversely by two valves.

11. GALEOBDOLOM. Cal. campanulate. Anthers glabrous; the cells diverging, bursting longitudinally. Lobes of lower lip of the cor. about equal. Achenes truncate.

12. LAMIUM. Cal. campanulate. Anthers hirsute; the cells diverging, bursting longitudinally. Lateral lobes of lower lip of cor. obsolete or toothlike, middle one bifid. Achenes truncate.

13. BETONICA. Cal. ovate. Anther-cells parallel, bursting longitudinally. Middle lobe of lower lip of cor. nearly entire, longer than the lateral spreading lobes.

14. STACHYS. Cal. campanulate. Anther-cells diverging, bursting longitudinally. Middle lobe of lower lip of cor. nearly entire, larger than the lateral reflexed lobes.

‡‡ *The two posterior or upper stamens the longest. Cal. 15-ribbed.*

15. NEPETA. Upper lip of the cor. straight, emarginate or bifid.

†† *Cal. 10-toothed. Stamens included within the tube of the cor.*

16. MARRUBIUM. The two anterior or lower stamens the longest.

** *Cal. obviously 2-lipped.*

† *Stamens distant at the base, but converging near the apex.*

17. CALAMINTHA. Upper lip of the cor. straight, nearly flat; tube straight.

17a. MELISSA. Upper lip of the cor. concave; tube curved upwards.

†† *Stamens ascending, parallel.*

18. MELITTIS. Cal. campanulate, veined, spreading in fruit.

19. PRUNELLA. Cal. ovate, closed in fruit; upper lip 3-toothed, lower bifid.

20. SCUTELLARIA. Cal. ovate, closed in fruit; lips entire, upper one with a concave scale at the back.

A. *Stamens* 2. (Gen. 1, 2.)1. *Lycopus* Linn. Gipsy-wort.

Cal. tubular, 5-cleft. *Cor.* tubular: *limb* nearly equal, 4-cleft, upper segments broader and notched. *Stam.* 2, diverging, simple, with sometimes 2 sterile ones.—Name: from *λυκος*, a wolf, and *πους*, a foot; from a fancied resemblance in the cut leaves of this plant to a wolf's paw: *der Wolfsfuss*, in German; in English, *gipsy-wort*, because the plant yields a black dye which is employed by gipsies to render their skins darker.

1. *L. Europæus* L. (*common G.*); leaves deeply and irregularly pinnatifid-serrate, rudiments of the sterile stamens minute, achenes about as long as the calyx-tube. *E. B. t.* 1105.

Ditches and river banks; less frequent in Scotland. *℥.* 6—9.—*Stems* 2 ft. high. *Leaves* opposite, nearly sessile, ovato-lanceolate, wrinkled, very deeply sinuato-serrate, almost pinnatifid. *Flowers* small, sessile, in dense *whorls* at the base of the superior leaves, whitish with purple dots, hairy within.

2. *Sálvia* Linn. Sage or Clary.

Cal. 2-lipped, tubular. *Cor.* labiate; the *tube* dilated upwards and compressed. *Stam.* 2. *Filaments* with 2 divaricating branches, 1 only bearing a perfect, single cell of an *anther*.—Named from *salvo* to *save*, or *heal*; in allusion to its balmy or healing qualities.

1. *S. *pratensis* L. (*Meadow C.*, or *S.*); root-leaves oblong-ovate cordate at the base irregularly crenate stalked, those of the stem few sessile, uppermost lanceolate acuminate, bractæas cordate-ovate acuminate shorter than the calyx, corolla thrice as long as the calyx glandular and viscid at the summit. *E. B. t.* 153.

Dry meadows and about hedges, England, rare: near Cobham, Kent; Middleton Stoney, Oxfordshire. *℥.* 6, 7.—*Stem* varying from 6 inches to 2 feet high.

2. *S. Verbenáca* L. (*wild English C.*, or *S.*); leaves broadly ovate or oblong crenate, lower ones long-stalked, upper ones broader sessile semiamplexicaul, bractæas cordate-ovate acuminate about as long as the calyx, tube of the corolla much narrower and scarcely longer than the calyx. *E. B. t.* 154.

Dry pastures and banks, especially in a chalky or gravelly soil; not uncommon in England, but in Scotland only found about Edinburgh. *℥.* 5—8.—*Stems* one to two feet high. Lower *leaves* petiolate, ovate, scarcely cordate at the base; upper ones sessile and acute, less lobed, but more serrate; all wrinkled with veins. *Bractæas* 2 under each whorl of flowers, cordate, acute, entire, ciliate. *Cal.* hairy, segments mucronate. *Cor.* small in proportion to the calyx, purple; *upper lip* concave compressed.

3. *S. clandestina* L. (*small-flowered S.*); leaves ovate-oblong incise-toothed or pinnatifid, lower ones stalked, upper oblong acute sessile scarcely cordate or amplexicaul, bracteas cordate-ovate acuminate slightly shorter than the calyx, tube of the corolla longer than the calyx. *S. obtusata* Link. *S. præcox* Savi.

Dry gravelly banks, rare. Lizard Point, Cornwall. Jersey. 4. 7.—This is a very variable plant, but usually with deeply toothed or pinnatifid leaves, and appears to be the southern form or representative of *S. Verbenaca*, to which also several other supposed species may be conveniently referred.

B. *Stamens* 4. (Gen. 3—20.)

Tribe I. MENTHOIDEÆ. *Tube of the cor. scarcely longer than the cal., its limb 4—5 cleft, nearly regular. Stam. diverging upwards.* (Gen. 3.)

3. MÉNTHA Linn. Mint.

Cal. equal, 5-toothed; its *mouth* naked or rarely villous. *Cor.* nearly regular, 4-cleft; its *tube* very short. *Stam.* diverging, exserted or included. *Anther-cells* parallel.—Name: *μινθα* or *μινθη*, an ancient Greek term for these plants.

* *Throat of the cal. naked. Inflorescence terminating the stems. Upper or all the whorls approximated into spikes or in terminal heads.*

† *Leaves sessile or the lower ones only stalked.*

1. *M. sylvestris* L. (*Horse M.*); leaves subsessile ovate elliptical or lanceolate sometimes subcordate at the base serrate, downy hoary beneath, spikes almost cylindrical scarcely interrupted, bracteas subulate, calyx very hairy, its teeth acuminate.—*α.* leaves lanceolate. *E. B.* t. 686.—*β.* leaves elliptical. *M. rotundifolia* Sole.

Moist waste ground: not uncommon in England. Sidlaw Hills, Forfarshire. Ireland. 4. 8, 9.—Partial bracteas sometimes much longer than the *flowers*, and far more conspicuous than in the figure in *E. B.* There is a variety with somewhat wrinkled and crisped leaves, which passes into our *β.*: it however can scarcely be *M. crispa* *E. B.* S. t. 2785, which seems, from the figure, more allied to *M. aquatica*.

2. *M. rotundifolia* L. (*round-leaved M.*); leaves sessile elliptical obtuse sharply serrate wrinkled downy shaggy beneath, spikes interrupted, bracteas lanceolate, calyx somewhat hairy, its teeth short and acute. *E. B.* t. 446.

Moist places, in waste ground; not unfrequent in many parts of England. Anglesea. Near Auchindenny, Scotland; but scarcely wild. Near Cove, Ireland. 4. 8, 9.

3. *M. * viridis* L. (*Spear M.*); leaves lanceolate acute gla-

brous serrate sessile, spikes cylindrical interrupted, bractæas subulate, calyx-teeth linear-setaceous. *E. B. t.* 2424.

Marshy places, in many parts of England, according to *Smith*. Cairn-hill, near Edinburgh. A *var.* with crisped leaves has occurred in Glen Farg, Perthsh., along with the usual form and *M. piperita*. *γ*. 8.—Mr. Bentham remarks that the *bractæas* and the *calyx* are either glabrous or hairy: the *pedicels* seem to be always glabrous. Cultivated for culinary purposes, being aromatic and pungent.

†† *Leaves stalked*.

4. *M. piperita* Sm. (*Pepper M.*); leaves ovate-oblong strongly serrate acute slightly hairy stalked, upper ones smaller, spikes lax interrupted below, bractæas lanceolate, calyx tubular with lanceolate subulate teeth quite glabrous at the base.—*α. officinalis* (Sole), leaves ovato-lanceolate or oblong, spikes short obtuse. *E. B. t.* 687.—*β. sylvestris* (Sole), leaves ovate rounded and almost cordate at the base, spikes elongated.

Watery places, in many parts of England, but often escaped from gardens. Alford, Aberdeenshire; North Queensferry. *γ*. 8, 9.—Much cultivated for the sake of its essential oil, which resides in minute glands conspicuous on the *leaves* and especially on the *cal.* Mr. W. Wilson finds a *var.* near Warrington, in which these glands are not visible even with a microscope: "its odour is sweet and mild, without the pungency of the common sort cultivated in gardens."

5. *M. aquatica* L. (*Water capitate M.*); leaves ovate serrate stalked rounded or slightly cordate at the base, uppermost ones bracteiform and shorter than the flowers, flowers dense in terminal obtuse heads or spikes and sometimes also in remote axillary whorls, calyx tubular, its teeth triangular-subulate.—*α.* leaves pubescent or villous, calyx and pedicels hairy. *M. hirsuta* L.: *E. B. t.* 447.—*β.* leaves incise-toothed and crisped. *M. crispa* *E. B. S. t.* 2785?—*γ.* leaves, calyx, and pedicels quite glabrous. *M. citrata Ehrh.* *M. odorata Sole*: *E. B. t.* 1025.¹

Banks of rivers and marshes, frequent.—*β.*? Northumberland and near Audley-End, Essex.—*γ.* Cheshire; near Bedford; N. Wales. *γ*. 8, 9.—Of the *var. γ.* we have only seen garden specimens; it is quite glabrous and has the smell of the *Bergamot-orange* or the herbage of *Monarda didyma*, whence it is called the *Bergamot-mint*. We refer *M. crispa* *E. B. S.* here, on the authority of Mr. Bentham; but the flowers are not sufficiently capitate, although the spike be shorter than in *M. piperita*; as, however, all the crisped-leaved forms of *Mint* are monstrosities, the species from which they are derived can scarcely be determined by the usual characters.

¹ Nearly all the species of this genus are hairy with serrate leaves, but are subject to two principal variations, *viz.*:—to be almost entirely glabrous, in which case the pedicels and lower part of the calyx become quite glabrous, and the odour of the species is milder and even pleasant;—and to have the leaves cut and crisped. This latter is more strictly a monstrosity, and is sometimes accompanied with a considerable change in the inflorescence.

** Throat of the cal. naked. Inflorescence indeterminate, flowers in axillary distant whorls, none among the uppermost leaves (or much shorter than they).

† Leaves stalked.

6. *M. sativa* L. (*Marsh whorled M.*); leaves stalked elliptical ovate or ovato-lanceolate serrate, upper ones similar but smaller all longer than the distant dense whorls, calyx tubular with lanceolate acuminate teeth. *M. arvensis* var. *Benth.*—*α.* whole plant more or less hairy, calyx and pedicels hairy. *E. B. t.* 448.—*M. acutifolia* Sm.: *E. B. t.* 2415.—*β.* whole plant nearly glabrous, pedicels and lower part of the calyx quite glabrous. *M. rubra* Sm.: *E. B. t.* 1413.

Wet places, banks of rivers, and in hedges and thickets. 4. 7, 8.—The chief difference between this and the next is in the form of the calyx. The present is never, we believe, found in corn-fields, while genuine specimens of the other are almost confined to them or gardens; but *M. gentilis* L. has the calyx and large upper leaves of *M. arvensis*, while it is almost glabrous like *M. rubra* Sm., and grows in wet places: Mr. Babington unites it to this species; Mr. Bentham to the next: it seems to connect the two.

7. *M. arvensis* L. (*Corn M.*); leaves stalked ovate or elliptical sometimes cordate at the base serrate, upper ones similar and equally large all longer than the distant whorls, calyx campanulate, its teeth triangular acute about as broad as long.—*α.* hairy, leaves narrowed at the base, calyx clothed all over with spreading hairs. *E. B. t.* 2119.—*β.* hairy, leaves somewhat cordate rugose, calyx clothed all over with spreading hairs. *M. agrestis* Sole: *E. B. t.* 2120.—*γ.*? more glabrous, upper part of the calyx clothed with erect hairs, lower part and pedicels glabrous. *M. gentilis* L.: *E. B. t.* 2118.

α. Corn-fields, common.—*β.* corn-fields and neglected gardens; Somersetshire; plentiful in Sussex.—*γ.* watery places, rare; Holt in Norfolk; Somersetshire; river-side above Warrington. N. Wales. 4. 8, 9.—The smell of the common variety has been compared to that of decayed cheese.

†† Leaves nearly sessile.

8. *M. *pratensis* Sole (*narrow-leaved M.*); leaves nearly sessile ovato-lanceolate acute serrate, upper ones similar all longer than the distant subglobose whorls, calyx campanulate, lower part and pedicels glabrous, teeth triangular acute hairy. *M. gentilis* Sole: *E. B. t.* 449. *M. gracilis* Sm.

Watery places in moist meadows (*Sm.*). 4. 8, 9.—*Stem* and *leaves* usually glabrous. *Leaves* paler beneath and the *calyx* glandular. With this we are not acquainted. Sole doubts if it be indigenous. Mr. Bentham remarks that it is intermediate between *M. viridis* and *M. sativa* var. *β.*, having the inflorescence of the present section and

the nearly sessile leaves of *M. viridis*; in his Handbook he inadvertently refers E. B. t. 449 to *M. arvensis*.

*** *Throat of the calyx closed with hairs. Flowers in axillary distant whorls, none among the uppermost leaves.*

9. *M. Pulégium* L. (*Penny-royal*); flowers whorled, leaves ovate downy obtuse subcrenate, stem prostrate, flower-stalks slightly and calyx very pubescent, teeth of the latter fringed. *E. B.* t. 1026.

Wet commons and margins of brooks; England and S. of Ireland. Rare in Scotland and scarcely indigenous. μ . 8, 9.—The smallest of the genus, readily known by its prostrate stems, and small, frequently recurved leaves, both of which are thickly covered with short hairs, and especially by the hairy throat of the calyx. Smell powerful. Much used medicinally.

Tribe II. SATUREINEÆ. *Corolla two-lipped, the tube about as long as the calyx; lips nearly equal in length, upper one nearly plane. Stam. diverging, nearly equal, protruded.* (Gen. 4, 5.)

4. THÝMUS Linn. Thyme.

Flowers whorled or capitate. *Cal.* with 10—13 ribs, tubular, 2-lipped; upper lip 3-toothed, lower one bifid; the throat hairy. *Cor.* with the upper lip erect, nearly plane; lower patent and trifid. *Stamens* diverging. *Anther-cells* at first nearly parallel, afterwards diverging; *connectivum* subtriangular.—Name: *θυμός*, the heart; from its balsamic odour strengthening the animal spirits.

1. *T. Serpyllum* L. (*wild T.*); flowers whorled and capitate, stems branched decumbent, leaves plane oblong or ovate obtuse entire petiolate more or less ciliate at the base, floral leaves similar, teeth of the upper lip of the calyx ovato-lanceolate of the lower subulate ciliate, upper lip of the corolla notched more or less ovate. *E. B.* t. 1514.— α . stems prostrate creeping, flowering shoots ascending, upper lip of the cor. oblong.— β . stems and flowering shoots diffuse ascending, upper lip of the cor. semicircular. *T. Chamædrys* Fries.

Hills and dry pastures, abundant. μ . 6—8.—Variable in size, and in the hairiness and scent of its foliage, which is sometimes all over hoary, and smells like lemon. *Flowers* purple. Mr. Bentham, the best authority for what is a species among the Labiatæ, unites *T. Chamædrys* of Fries to *T. Serpyllum*, characterizing it as a variety by the larger and less rigid leaves. Mr. Babington separates it on account of its having a different habit:—the above characters of our varieties are intended to indicate the chief specific differences upon which he rests; he adds that in *T. Serpyllum* the achenes are “globose,

mealy, with a basal scar," and in *T. Chamædrys*, "roundish, a little compressed, with a basal apiculus, reddish." Ann. N. H. (1853) xi. p. 428.

[The other Linnæan species of *Thymus* are referred to *Calamintha*.]

5. ORÍGANUM Linn. Marjoram.

Spikes (or *heads*) of *flowers* somewhat 4-sided, resembling a *catkin*, imbricated with *bracteas*. *Cal.* equally 5-toothed (or 2-lipped). *Cor.* with the upper *lip* erect, nearly plane; lower one patent, trifid. *Stamens* diverging, *connectivum* subtriangular. —Name: *ορος*, a hill, and *χαρος*, joy; from the dry hilly places of which the species are the ornament.

1. *O. vulgäre* L. (common *M.*); heads of flowers roundish paniced crowded, bracteas ovate longer than the calyx, calyx equally 5-toothed, hairy in the throat, leaves stalked broadly ovate obtuse entire or toothed. *E. B.* t. 1143.

Dry hilly and bushy places, not unfrequent. 4. 7—9. — *Stems* 1 foot high. *Flowers* purple; *bracteas* tinged with the same colour. Fragrant and aromatic.

[*Origanum Onites* L., or *Pot Marjoram*, is mentioned in Ray's *Synopsis*, p. 236, as having been found by Mr. Dale "on the left hand of the road from Braintree to Raine (Essex), beyond the bridge;" but it cannot be indigenous there, being entirely a Mediterranean plant. The calyx is cleft in front; its upper lip is large and orbicular, lower nearly wanting.]

Tribe III. AJUGOIDEÆ. *Corolla* irregular; upper lip abbreviated or apparently wanting. *Stamens* much exserted, didynamous, parallel, ascending; the two lower ones the longest. (Gen. 6, 7.)

6. TEÚCRIMUM Linn. Germander.

Cal. tubular, 5-toothed, nearly equal or 2-lipped. *Cor.* with the upper *lip* bipartite; lower one patent, 3-fid. *Stam.* much exserted. *Cells* of the *anthers* confluent, spreading. —Named from an ancient king of Troy, called *Teucer*, who is said to have first employed this plant medicinally.

1. *T. Scorodónia* L. (*Wood G.*); leaves oblong-ovate cordate at the base petiolate downy crenate green on both sides, floral ones small about the length of the pedicels, flowers in lateral and terminal one-sided racemes, calyx sub-bilabiate, upper lip ovate entire lower 4-toothed, tube of the corolla exserted, stem erect. *E. B.* t. 1543.

Woods and dry stony places, frequent. 4. 7, 8. — *Stems* 1—2 ft. high. *Leaves* very much wrinkled. *Flowers* yellowish-white. *Stam.* purplish-red. The plant is extremely bitter, and has been sometimes substituted for hops.

2. *T. Scórdium* L. (*Water G.*); herbaceous perennial procumbent at the base villous or rarely glabrous, leaves oblong or ovate-oblong toothed sessile green on both sides, floral ones similar, whorls axillary 2—6-flowered, calyx deelineate campanulate gibbous at the base on the under side, the teeth short nearly equal. — *a.* leaves narrow or rounded at the base. *T. palustre* Lam. — *β.* leaves shorter cordate-amplexicaul at the base. *E. B.* t. 828. *T. scordioides* Schreb.

Low wet meadows, rare. Near the bridge of Portumna, county Tipperary, Ireland. Devonshire, Oxfordshire, Cambridgeshire, and Yorkshire. *℥.* 7, 8. — The var. *a.* is the plant of Linnaeus; but Mr. D. Moore (in the *Phyt.* ii. p. 129) has proved the two supposed species to be the result of situation.

3. *T. *Bótrys* L. (*cut-leaved annual G.*); annual erect villous, leaves pinnatifid, segments oblong quite entire or incise divaricate green on both sides, floral leaves similar, whorls axillary 6-flowered, calyx gibbous at the base on the under side inflated tubular, the teeth lanceolate equal.

Rare. In a stony and steep valley, facing the south, near the end of Box Hill farthest from Burford Bridge. ☉. 8.

4. *T. *Chamæ'drys* L. (*Wall G.*); leaves ovate inciso-serrate wedge-shaped and entire at the base green on both sides, floral leaves smaller nearly entire, whorls of 2—6 flowers, upper ones racemose, calyx deelineate campanulate, the teeth lanceolate-aeminate nearly equal, flowers axillary, stem ascending. *E. B.* t. 680.

Borders of fields and mostly ruined walls; Winchelsea Castle, Sussex; Gateshead, Durham; St. David's, Pembrokeshire; city walls of Norwich; plentiful. Near Coupar, Forfar, and Kelly Castle, Forfarshire; Methven wood, Perthshire. Near Cork. *℥.* 7. — *Flowers* reddish-purple, large handsome, mostly in the terminal axils.

[*Teucrium regium* Schreb., supposed by Mr. Benthams to be a var. of *T. flavum*, a plant peculiar to the region of the Mediterranean, is said to have been found on a declivity of the Bloreng near Abergavenny; but it cannot be indigenous.]

7. *A'JUGA* Linn. Bugle.

Cal. ovate, nearly equal, 5-cleft. *Cor.* with the tube exerted: upper lip short, erect, entire or emarginate; lower one larger, patent, trifid. *Stam.* 4, ascending, protruded above the upper lip; cells of the *anthers* diverging or divaricate, at length confluent. — Name said by Pliny to be corrupted from *Abiga* (*abigo*, to expel) of the Latins, a medicinal plant allied to this; but the Greek *αζύξ* (æceus. *αζύγα*), *unyoked*, is the more probable derivation.

1. *A. réptans* L. (*common B.*); glabrous or downy, stem

solitary with creeping scions, leaves ovate or obovate sinuate or quite entire. *E. B.* t. 489. *A. alpina* *E. B.* t. 477.?

Moist pastures and woods abundant. 4. 5, 6. — *Leaves* broadly ovate, more or less crenate, lower ones and those on the scions tapering into a foot-stalk. *Flowering-stem* erect, with sessile leaves. *Flowers* blue (sometimes white or flesh-coloured), in whorls of 6—20 from the axils of the upper leaves or bracteas, which are often purplish. What the true *A. alpina* of Linnæus is, is not easily determined. Smith, on the authority of the Linnæan herbarium, asserts that it has no scions, and considers that *A. Genevensis* L. is probably the same. Fries states that it has scions when specimens are perfect, and that the lower floral leaves are lobed; so that it appears to be only a slight variety of *A. reptans*. Mr. Benthham refers the British species to *A. reptans*, but unites *A. pyramidalis* to *A. Genevensis*. The stations usually assigned to *A. alpina* are: "mountains of Aberdeenshire, not uncommon;" Carnedd-Llywelyn, in Caernarvonshire; Castleton, Derbyshire; County of Durham; and Cave-hill, Belfast. The Scotch ones have all proved to be *A. reptans*; the Durham locality is denied by Winch; the Welsh one is very doubtful, and no species without scions can be found on Cave-hill, nor in any Belfast herbarium by Professor G. Dickie.

2. *A. pyramidalis* L. (*pyramidal* B.); hairy or glabrous, upper or all the whorls spicate, scions none, radical leaves oblong-ovate large more or less crenate, floral leaves broadly ovate quite entire or obscurely sinuate longer than the flowers and crowded into a pyramidal and tetragonal form, upper ones usually coloured. *E. B.* t. 1270.

Highland pastures, rare. Ben Nevis; plentiful at the Burn of Kilgower and on the Ord of Caithness; Tor Aichaltie, near Brahan Castle, Ross-shire; Appin; Strath Erric, Inverness-shire; Isle of Lewis; Orkney. S. Isles of Arran, Ireland. 4. 5, 6. — *Stem* 4—6 inches high. *Leaves* gradually becoming smaller from the base upwards.

3. *A. Chamæpitys* Sm. (*Ground-Pine*, or *yellow* B.); hairy, stems much branched spreading, leaves tripartite their segments linear entire, floral leaves similar longer than the axillary solitary flowers. *E. B.* t. 77. *Teucrium* L.

Sandy or gravelly fields. Not unfrequent in Kent and Surrey; Triplo w Heath, Cambridgeshire; Purfleet, Essex. ☉. 4—10. — Very different in habit from the preceding species. *Flowers* yellow, spotted with red, and nestled among the narrow segments of the leaves, of which the lowermost are much broader. *Stem* reddish-purple, glutinous.

Tribe IV. ΝΕΡΥΤΕÆ. *Cor.* 2-lipped. *Stamens* ascending or converging, shorter than the upper lip. (Gen. 8—20.)

* *Cal.* equal or oblique, 5—10-toothed, not 2-lipped. (Gen. 8—16.)

† *Stamens* ascending, longer than the tube of the corolla. (Gen. 8—15.)

8. BALLÓTA Linn. Horehound.

Cal. salver-shaped, equal, with 10 ribs and 5 broad mucronate teeth, naked within. *Cor.* with the tube included: upper lip erect, concave; lower one trifid, middle lobe the largest, emarginate. The two anterior *stamens* the longest. *Cells* of the *anthers* diverging, opening longitudinally. *Achenes* rounded at the end.—Named βαλλωτη, from βαλλω, to reject; on account of its disagreeable smell.

1. *B. nígra* L. (*black H.*); leaves ovate crenato-serrate, bracteas linear-subulate, teeth of the calyx shortly acuminate patent longer than the tube of the corolla.—*α.* cal.-tube shorter and stouter, the teeth broadly ovate short suddenly acuminate mucronate carinate reflexed. *E. B.* t. 46. *B. fœtida* Lam. *B. borcalis* Schweigg.—*β.* cal.-tube narrow and elongate dilated upwards, the teeth ovate gradually acuminate aristate erecto-patent. *B. ruderalis* Fries.

Waste places near towns and villages, less frequent in the north.—*β.* Bomere, Shropshire. *ϑ.* 6—10.—*Stems* 2—3-ft. high. *Flowers* in whorls, purple, rarely white. Whole plant fetid. Fries, Leighton, and some others, pronounce the above varieties to be quite distinct species; but Mr. Bentham does not consider them sufficiently marked to be noticed even as varieties.

9. LEONÚRUS Linn. Motherwort.

Cal. with 5 or 10 ribs, equal, with 5 subulate teeth, the throat naked. *Cor.* with the upper lip nearly flat, very hairy above, entire; lower one patent, trifid. The two anterior *stamens* the longest. *Anthers* sprinkled with shining dots; *cells* parallel, opening longitudinally. *Achenes* truncate.—Named from λεων, a lion, and ουρα a tail; from a fancied resemblance in the plant to a lion's tail.

1. *L. *Cardiaca* L. (*common M.*); leaves petiolate, lower ones palmately 5-cleft incise-toothed, upper cuneate-lanceolate 3-lobed, uppermost entire, tube of the corolla with an oblique ring. *E. B.* t. 286.

Hedges and waste places, in several parts of England. About Edinburgh. South of Ireland. *ϑ.* 7—9.—*Stem* 3 ft. high, branched.

Flowers in crowded whorls, white with a reddish tinge; upper lip of cor. shaggy. *Cal.* with pungent spreading teeth, the two lower rather the longest.

10. GALEÓPSIS Linn. Hemp-nettle.

Cal. campanulate, equal, 5-toothed, teeth mucronate. *Cor.* with the tube exserted, the throat inflated: upper lip arched; lower one with 3 unequal lobes, having two teeth on its upper side. The two anterior *stamens* the longest. *Anther*-cells opposite, bursting transversely, two-valved. *Achenes* rounded at the end. —Name: γαλεη, a weasel, and οψις, aspect or appearance; from a resemblance in the lip of the flower to the snout of that animal.

1. *G. Lúdanum* L. (red H.); stem softly pubescent with deflexed hairs or glabrous, not swollen below the joints, leaves lanceolate subserrate downy on both sides, calyx having sometimes a few glands, upper lip of the corolla slightly notched. *E. B.* t. 884.

Gravelly or chalky fields, or on limestone rubbish. Rare in Scotland; near Dunfermline. ☉. 7—10. — *Stem* 10—12 inches high, with opposite branches. *Leaves* rather small, petiolate, hairy. *Flowers* purplish rose-coloured. Hairs on the calyx in the common form adpressed, with a few glands: when the hairs are spreading without glands, the plant becomes the *G. canescens* Schult., which has been observed at Southampton.

2. *G. ochroleúca* Lam. (downy H.); stem softly pubescent with deflexed hairs not swollen below the joints, leaves ovato-lanceolate serrate, soft and downy on both sides, calyx glandular-hairy, upper lip of the corolla deeply notched. *G. villosa* Huds.: *E. B.* t. 2353.

Sandy corn-fields, rare. Yorkshire; Lancashire; Nottinghamshire; Berechurch, Essex. Bangor, Wales. ☉. 7, 8. — *Flowers* large, pale yellow. The names given by Lamarck has unquestionably the priority by twelve years of that by Hudson.

3. *G. Tétrahit* L. (common H.); stem hispid swollen below the joints, leaves oblong-ovate acuminate hispid serrate, calyx-teeth twice as long as the tube, corolla with the tube as long as the calyx, upper lip erect ovate. *E. B.* t. 207. *G. bifida* Boenn.

Corn-fields and cultivated grounds, frequent. ☉. 7—9. — *Stem* 1—2 ft. high. *Flowers* purplish, often white.

4. *G. versicolor* Curt. (large-flowered H.); stem hispid swollen below the joints, leaves oblong-ovate acuminate hispid serrate, calyx-teeth shorter than the tube, corolla with the tube much longer than the calyx, upper lip horizontal inflated. *E. B.* t. 667.

Corn-fields, Norfolk ; common about Warrington. Near Llanrwst, N. Wales. Abundant in Scotland, especially in the Highlands. Ireland. ☉. 7, 8.—Often 2—3 feet high, with large rank foliage. *Flowers* showy, yellow, with a broad purple spot on the lower lip. Mr. Bentham unites it to the last ; Mr. Borrer, we believe, entertains the same opinion : we merely retain it because we have not observed intermediate forms, and because it is as readily distinguished in the herbarium as when growing.

11. *GALEOBDELON* Huds. Weasel-snout.

Cal. campanulate, 5-ribbed, nearly equal, 5-toothed. Upper lip of the *cor.* incurved, arched, entire ; lower one smaller, in 3 nearly equal lobes. The two anterior *stamens* the longest : *anther*-cells diverging, opening longitudinally. *Achenes* acutely triquetrous, flatly truncate at the end.—Named from γαλην, a weasel, and βέλος, a fetid scent.—Formerly considered synonymous with *Galeopsis*, from which genus it is now removed.

1. *G. luteum* Huds. (*yellow W.*, or *Archangel*) ; lateral lobes of the lower lip of the corolla oblong acute. *E. B.* t. 787. *Lamium Galeobdolon* Crantz.

Woods and shady places, in England, the south of Scotland, and Ireland. ♀. 4—6.—One foot or more high. *Leaves* ovate-acuminate, petiolate, deeply serrate. *Flowers* whorled, yellow ; lower lip orange and spotted.

12. *LAMIUM* Linn. Dead-nettle.

Cal. campanulate, 10-ribbed, 5-toothed, nearly equal. *Cor.* with the throat inflated ; upper lip entire, arched ; lower one patent, 2-lobed, with one or two teeth on each side at the base. The two anterior *stamens* the longest. *Anther*-cells diverging, opening longitudinally. *Achenes* acutely triquetrous, flatly truncated at the end.—Named from λαιμος, the throat ; on account of the shape of the flower.

1. *L. album* L. (*white D.*) ; leaves cordate-acuminate deeply serrate stalked, calycine teeth long subulate always spreading, tube of the corolla curved upwards having a hairy ring within, the throat dilated, upper lip oblong, lateral lobes of the lower one with 1—3 long subulate teeth. *L. vulgatum* Benth.—*α.* flowers white, leaves spotless. *L. album* *E. B.* t. 768.—*β.* flowers white, leaves with white blotches.—*γ.* flowers purple, leaves spotless. *L. lævigatum* L. *L. rugosum* Ait. *L. maculatum* Sm. : *E. B.* t. 2550.—*δ.* flowers purple, leaves smaller with white blotches. *L. maculatum* L.

Borders of fields and waste places, abundant.—*β.* Below Partick near Glasgow.—*γ.* Naturalized near Bristol, London, and in Fifeshire.—*δ.* Fifeshire ; Musselburgh ; Hamilton. ♀. 5—9.—We have followed Mr. Bentham in uniting *L. lævigatum* and *maculatum*

of Linn., and *L. rugosum* of Aiton, with *L. album*: we do not find the characters taken from the calyx, and ring of hairs within the corolla pointed out by some, to be constant.

2. *L. purpureum* L. (*red D.*); leaves cordate crenate all stalked, upper ones crowded, teeth of the calyx as long as the tube always spreading, tube of the corolla straight having a hairy ring within, the throat much dilated, lateral lobes of the lower lip with two short teeth. *E. B. t.* 769.

Borders of fields and in hedges, plentiful. ☉. 4—10.—*Leaves*, especially the upper ones, with a silky hairiness, and a purplish tinge on the floral ones.

3. *L. incisum* Willd. (*cut-leaved D.*); leaves broadly cordate or deltoid-cuneate deeply inciso-crenate all stalked, the uppermost crowded, teeth of the calyx subulate about as long as the tube always spreading, tube of the corolla straight naked within, lateral lobes of the lower lip with a short tooth. *E. B. t.* 1933.

Cultivated and waste ground, growing very large in the Hebrides. ☉. 4—6.—Very difficult to be distinguished by characters either from the last or the next species, and perhaps the three might be judiciously combined.

4. *L. intermedium* Fries (*intermediate D.*); leaves obtuse inciso-crenate, lower ones stalked, upper reniform-cordate, floral ones sessile rather crowded, teeth of the calyx subulate longer than the tube always spreading, tube of the corolla straight naked within, lateral lobes of the lower lip with a short tooth. *E. B. S. t.* 2914.

Newport, Isle of Wight; Shropshire. Not uncommon in Scotland. Sligo, Ireland. ☉. 6—9.—Calyx spreading, as in the two last, different, even in the herbarium, from that of the next species, to which however Mr. Bentham unites it: more probably, as appears to us, it is a variety of *L. incisum*.

5. *L. amplexicaule* L. (*Henbit D.*); leaves orbicular wrinkled inciso-crenate, the floral ones sessile becoming distant by the lengthening of the stem, teeth of the calyx lanceolate-subulate about as long as the tube, connivent after flowering, tube of the corolla straight naked within, tooth of the lateral lobes of the lower lip obsolete. *E. B. t.* 770.

Waste places, sandy fields and gardens. ☉. 4—8.—*Corolla* of a fine deep rose-colour, with a very slender tube, often small and abortive although the *achenes* ripen.

13. BETÓNICA Linn. Betony.

Cal. ovate, 10-ribbed; teeth 5, equal, awned. *Cor.* with the tube exserted, cylindrical: upper lip ascending; lower one

patent trifid, its middle lobe entire, or nearly so. The two anterior *stamens* the longest. *Anther*-cells somewhat parallel, opening longitudinally. *Achenes* rounded at the end.—Name altered from *Bentonic*, in Celtic; *ben*, meaning *head*, and *ton*, *good*, or *tonic*. Its properties are cephalic.

1. *B. officinális* L. (*Wood B.*); hairy, spike interrupted short, leaves cordate-oblong crenate, corolla twice as long as the calyx, stem naked, middle lobe of the lower lip somewhat notched. *E. B.* t. 1142. *Stachys Betonica Benth.*

Woods and thickets; frequent in England, not common in Scotland. 2. 6—8. *Stem* 1—2 feet high, hairy, with few *leaves*, the lowermost on long *footstalks*, upper and floral ones sessile, uppermost linear quite entire and as long as the *calyx*. *Spikes* oblong-ovate. *Calyx* nearly glabrous. *Bracteus* ovate, mucronate.

14. STÁCHYS Linn. Woundwort.

Cal. subcampanulate, 10-ribbed; teeth 5, nearly equal, acuminate. *Cor.* with the *tube* as long as the calyx: upper *lip* mostly arched, entire; lower one 3-lobed, with the two lateral lobes reflexed. The two anterior *stamens* the longest. *Anther*-cells diverging, opening longitudinally. *Achenes* rounded at the end.—This genus scarcely differs from *Betonica* but in the shorter tube of its corolla.—Name: *σπᾶχυς*, a *spike*; from the nature of the inflorescence.

1. *S. sylvática* L. (*Hedge W.*); whorls of 6—8 flowers distant, bracteus minute, cal.-teeth very acute, leaves cordate-ovate acute serrate long-stalked, upper floral ones linear entire. *E. B.* t. 416.

Woods and shady places. 2. 7, 8.—*Stem* 2—3 feet high, hairy, filled with pith. *Leaves* truly cordate and tapering from below the middle to a point, in which respect it differs from the following. *Petioles* as long as the leaves themselves. *Flowers* purple.

2. *S. palústris* L. (*Marsh W.*); whorls of 6—10 flowers, bracteus minute, cal.-teeth very acute, leaves linear-lanceolate or ovato-lanceolate rounded or cordate at the base sessile or shortly stalked.—*α.* lower leaves shortly stalked, upper sessile and semi-amplexicaul. *E. B.* t. 1675.—*β.* *ambigua*, leaves distinctly stalked, stalks not above half the length of the leaf. *S. ambigua Sm.: E. B.* t. 2089.

River-banks and watery or moist places, frequent.—*β.* not uncommon in Scotland, especially in the West Highlands; also in various places in England and Ireland. 2. 7, 8.—*Rhizome* extensively creeping. *Stem* hollow. There seem to be two plants known under the name of *S. ambigua*: the one with narrow leaves, on stalks not a fourth of their length, is certainly a mere variety of *S.*

palustris; the other, having broader leaves and longer stalks, may be a hybrid between it and *S. sylvatica*.

3. *S. Germánica* L. (*downy W.*); whorls many-flowered, leaves oblong-ovate or ovato-lanceolate with a cordate base crenate or serrate densely silky stalked, upper ones lanceolate acute sessile, calyx silky, teeth acute subspinose, corolla externally woolly, bractæ as long as the calyx, stem erect woolly. *E. B.* t. 829.

Fields and hedges in England, on a limestone soil, and chiefly in Oxfordshire and Bedfordshire. 4. 7.—Remarkable for its dense covering of silky hairs or wool. Mr. Bentham remarks that he cannot satisfactorily distinguish this from the garden *S. lanata* on the one hand, nor from *S. alpina* on the other.

4. *S. arvensis* L. (*Corn W.*); annual, whorls of 4—6 flowers, stem decumbent or ascending, leaves cordate-ovate obtuse crenate slightly hairy stalked, floral ones ovate-oblong sessile acute, teeth of the calyx lanceolate-aristate, corolla scarcely longer than the calyx. *E. B.* t. 1154.

Dry corn-fields, frequent. ☉. 4—11.—Distinguished by its diminutive size, weak stems, small and obtuse generally stalked leaves, and its pale purplish corollas, which scarcely exceed the calyx in length.

5. *S. *ánua* L. (*pale annual W.*); annual erect downy, whorls of 4—6 flowers spicate, leaves oblongo-lanceolate rather acute crenato-serrate 3-nerved the lower ones stalked, floral ones lanceolate acute, cal. hairy its teeth lanceolate-subulate, tube of the corolla longer than the calyx. *E. B.* t. 2669.

Fields between Gadshill and Rochester, Kent. ☉. 8, 9.—*Achenes* roundish, glossy, minutely rough.

15. NÉPETA Linn. Cat-mint. Ground-Ivy.

Cal. tubular, many- (15-) ribbed, its mouth usually a little oblique, 5-toothed. *Cor.* with the tube exserted: upper lip straight, emarginate or bifid; lower 3-fid. The two anterior stamens the shortest. *Anthems* before bursting approaching in pairs, cells diverging.—Named, some say, from *Nepi*, a town in Italy; others from *nepa*, a scorpion, for whose bite this plant was considered a cure.

1. *N. Catária* L. (*Cat-mint*); stems erect, flowers in spiked subpeduncled dense many-flowered whorls, leaves stalked cordate inciso-serrate whitish-pubescent beneath. *E. B.* t. 137.

Hedges and waste places, especially in a chalky or gravelly soil in England. Rare in Scotland; hedges near Craig-Nethan Castle, Glasgow, and between Culross and Kincardine. At Rathfarnham; and by the Shannon, opposite Limerick; Ireland. 2. 7—9.—*Stems*

2—3 feet high, downy, as well as the *leaves*, and whitish. *Floral leaves* bract-like. *Flowers* white, tinged and spotted with rose colour. Upper lip of the *corolla* emarginate, lower with the lateral lobes reflexed, the middle lobes broad, concave, crenate. *Anthers* reddish. *Achenes* smooth and glabrous.

2. *N. Glechóma* Benth. (*Ground-Ivy*); procumbent, leaves reniform crenate, whorls axillary stalked unilateral 3—4-flowered, teeth of the calyx ovate mucronate. *Glechoma hederacea* L.: *E. B.* t. 853.

Hedges and waste places, frequent. 4. 3—5. — Extensively creeping. *Leaves* stalked, downy; floral ones similar to the others. *Flowers* large, blue, or very rarely pure white. Upper lip of the *cor.* bifid; middle lobe of the lower one emarginate, plane, lateral lobes spreading.

†† *Stamens* ascending, included within the tube of the corolla.
(Gen. 16.)

16. MARRÚBIUM Linn. White Horehound.

Cal. with 10 ribs and 5 or 10 spreading teeth, the throat hairy. *Cor.* with the tube exserted; upper lip erect; lower one 3-lobed, middle lobe the largest, emarginate. The two anterior *stamens* the longest. *Achenes* flatly truncate at the end.—Name of doubtful origin; some say from a town so called in Italy.

1. *M. *vulgáre* L. (*common white H.*); everywhere hoary with a white thick pubescence or woolliness, stem erect, leaves roundish-ovate toothed or crenate wrinkled, calyx with 10 setaceous hooked teeth, upper-lip of the corolla oblong bifid. *E. B.* t. 410.

Waste places and way-sides, but scarcely wild. Not common in England; more rare in Scotland (as near Edinburgh), and in Ireland. 4. 8, 9. — *Stem* 1—1½ ft. high, bushy. *Flowers* small, almost white, in crowded whorls. Smell aromatic; flavour bitter. This plant has been much in use for coughs and asthma.

** *Calyx* 2-lipped. The two anterior *stamens* the longest.
(Gen. 17—20.)

† *Stamens* distant, but converging under the upper lip of the corolla. (Gen. 17.)

17. CALAMÍNTHA Mæsch. Calamint. Basil-Thyme. Wild-Basil.

Cal. 13-nerved, tubular: upper lip 3-, lower 2-fid, throat mostly hairy. *Tube* of the *cor.* straight: upper lip straight nearly plane; lower one spreading, trifid. *Anther-cells* at length

diverging. *Connectivum* subtriangular.—Name: καλός, good, and μινθα, mint; a plant whose scent was said to drive away serpents.

* *Annual.* Cal. gibbous at the base below. Middle lobe of the lower lip of cor. nearly entire. Whorls of about 6 simple 1-flowered pedicels, with almost no bractæas Acinos.

1. *C. A'cinos* Clairv. (common *B.*); stem ascending branched, leaves oblong on short stalks acute serrate more or less ciliate at the base. *Thymus* L.: *E. B.* t. 411. *Acinos vulgaris* Pers.

Cultivated fields, especially in a gravelly, sandy, chalky soil. Rare in Scotland; North Queensferry, &c. ☉. 7.—Stem 6—8 inches long. Leaves sometimes almost entire. Flowers bluish-purple. Lower lip of the corolla with the middle segment emarginate. Smell fragrant, aromatic.

** *Perennial.* Cal. nearly equal at the base. Middle lobe of the lower lip of cor. emarginate. Whorls of two lax peduncled cymes. Bractæas minute. Calamintha.

2. *C. Népetā* Clairv. (lesser *C.*); stem herbaceous with procumbent ascending or erect branches, leaves shortly stalked ovate serrate pale beneath, cymes stalked dichotomous many-flowered, calyx subcampanulate obscurely 2-lipped, teeth shortly ciliate all nearly of the same shape, the upper ones slightly shorter, hairs in the mouth prominent. *Melissa* L. *Thymus* Sm.: *E. B.* t. 1414.

Dry banks and way-sides, on a chalky soil, in England, not common. ♀. 7—8.—“Rather smaller in all its parts than the next, especially the leaves, which are strongly serrate. Odour strong, resembling *Mentha Pulegium*. The prominent white hairs on the mouth of the cal. distinguish this species from the next.”—Sm. Stalks of the cymes about as long as the primary partial stalk.

3. *C. officinālis* Mæneh (common *C.*); stem herbaceous with loose ascending branches, leaves stalked broadly ovate obtuse crenato-serrate green on both sides, cymes stalked few-flowered shortly dichotomous or umbellate, calyx distinctly 2-lipped, teeth with long ciliæ, those of the upper lip triangular straight or ascending, of the lower subulate and longer, hairs in the mouth not prominent, lobes of the lower lip of the corolla distant, middle one the longest. *Thymus Calamintha* Scop.; *E. B.* t. 1676. *Melissa Calamintha* L.

Way-sides and borders of fields, chiefly in gravelly soils in England, not very common. South of Ireland. ♀. 7—9.—*Rhizome* sometimes throwing out scions above ground, and not creeping below. Stalks of the cymes scarcely half the length of the primary partial stalk. Plant aromatic, and employed to make herb-tea. Mr. Bentham remarks that neither by habit nor characters can this be at

all times distinguished from *C. Nepeta* or *sylvatica*; and Mr. H. Watson is equally at a loss: we experience the same difficulty.

4. *C. sylvatica* Bromf. (*Wood C.*); stem herbaceous with ascending branches, leaves stalked broadly ovate sharply serrate green on both sides, cymes stalked many-flowered dichotomous, calyx distinctly 2-lipped, teeth with long cilia, those of the upper lip spreading or recurved, of the lower subulate and longer, hairs in the mouth not prominent, lobes of the lower lip of the corolla contiguous all nearly equally long. *E. B. S.* t. 2897.

Among copse-wood in the Isle of Wight. 4. 8—10. — *Rhizome* slightly creeping. *Leaves* large. *Stalks* of the *cymes* about as long as the primary partial stalk. The principal distinction between this and the last lies in the upper lip of the calyx and lower one of the corolla, and it is almost impossible to detect these characters in dried specimens.

*** *Cal. nearly equal at the base. Middle lobe of lower lip of cor. notched. Whorls sessile, dense, many-flowered, with numerous linear bracteas, forming a sort of involucre. Clinopodium.*

5. *C. Clinopodium* Benth. (*common W.*); leaves ovate obscurely serrate, whorls hairy, bracteas setaceous, pedicels branched. *Clinopodium vulgare* L.: *E. B.* t. 1401.

Hills and dry bushy places, not uncommon. 4. 7—9. — *Stem* 1—1½ foot high, with soft hairs. *Flowers* in crowded whorls, large, purple. Smell aromatic.

[*Melissa officinalis* L., or *Balm*, has been found naturalized in the south of England and Ireland.]

†† *Stamens ascending, parallel.* (Gen. 18—20.)

18. MELITTIS Linn. Bastard-Balm.

Cal. with branching veins, broadly campanulate; upper lip 2—3-toothed; lower two lobed, lobes broadly ovate. *Cor.* with the tube much exerted; upper lip nearly flat (or slightly concave) entire; lower one 3-lobed, spreading, lobes rounded, nearly equal. *Anthers* approaching in pairs and forming a cross; *cells* distinct, diverging, opening longitudinally.—Name: the same as μελισσα, a bee; from μελι, honey, on account of it yielding honey to bees.

1. *M. Melissophyllum* L. (*Bastard-Balm*): *E. B.* t. 577. *M. grandiflora* Sm.: *E. B.* t. 636 (*excl. syn. of Curtis*).

Woods, coppices, and hedges in the south (Hampshire), and particularly the south-west, of England. 4. 5, 6. — A most beautiful plant, a foot to a foot and a half high, with oblong-ovate or some-

what cordate serrate leaves, and large conspicuous often highly coloured flowers: the lower lip of the corolla is sometimes purple with a white margin, sometimes spotted with purple, but it varies considerably. The plant, when growing, is said to have a disagreeable smell, but when dried it is fragrant, like the *Anthoxanthum odoratum*, and the scent is retained for many years in the herbarium. *M. grandiflora* Sm. (the true *M. Melissophyllum* L.) is neither sufficiently marked nor permanent to constitute a distinct variety.

19. PRUNÉLLA Linn. Self-heal.

Cal. ovate; upper lip plane, more or less distinctly 3-toothed; lower one bifid. *Cor.* with the upper lip nearly entire, arched; lower one 3-lobed. *Filaments* with two teeth at the extremity, one bearing the 2-celled anther. *Style* bifid.—Named from the German, *bräune*, the quinsy (which it was supposed to cure); whence comes *Brunella* of C. Bauhin, softened into *Prunella* by J. Bauhin.

1. *P. vulgaris* L. (common *S.*); leaves stalked oblong-ovate, upper lip of the calyx truncate, its teeth usually obsolete, the teeth of the lower lip ovato-lanceolate mucronate, corolla scarcely twice the length of the calyx. *E. B. t.* 961.

Moist and barren pastures, frequent. 4. 7, 8. — *Leaves* in British specimens entire or toothed, in foreign ones sometimes incise or pinnatifid. *Flowers* very densely whorled, so as to form an imbricated oblong spike, with a pair of leaves at its base, and a pair of broad bracteas beneath each whorl. *Cor.* violet-blue, its lower lip finely toothed at the margin.

20. SCUTELLÁRIA Linn. Skull-cap.

Cal. broadly ovate, having a conspicuous concave tooth or scale on the upper side; its 2 nearly equal entire lips closed after flowering. *Cor.* with the tube much exerted; upper lip straight arched; lower one trifid. *Filaments* simple; anthers of the two lower stamens 1-celled, of the two upper 2-celled. *Style* bifid, upper lobe very short.—Named from *scutella*, a little dish or cup, which the calyx with its appendage or ear somewhat resembles.

1. *S. gulericuláta* L. (common *S.*); stem branched divaricate, leaves crenate oblong or ovato-lanceolate rounded or cordate at the base, flowers axillary solitary opposite secund, calyx downy without glands. *E. B. t.* 523.

Banks of rivers and lakes, especially in stony places. 4. 7, 8. — *Stem* 8 or 10 inches to 1 foot high. *Flowers* rather large, blue, usually downy.

2. *S. minor* L. (lesser *S.*); glabrous, leaves shortly stalked obtuse mostly quite entire, lowest ones broadly ovate, intermediate ones ovato-lanceolate cordate and somewhat hastate at

the base, upper and floral ones lanceolate rounded at the base, flowers (small) solitary axillary opposite unilateral, corolla nearly glabrous with the throat dilated, calyx downy without glands. *E. B. t.* 524.

Moist heathy places and by the sides of lakes, chiefly in the western and middle counties of England, very rare on the east coast. Wales. West coast of Scotland, rare; bog between Luss and Helensburgh, Dumbartonshire. *4.* 7—10. — *Stem* 4—6 inches high. Lower leaves sometimes with one or two teeth at the base, and hence sub-hastate; upper ones much narrower and quite entire. *Flowers* pale-reddish, almost white. Lower *lip* spotted.

ORD. LXIV. VERBENACEÆ *Juss.*

Calyx tubular or campanulate, persistent. *Corolla* monopetalous; *tube* elongated; *limb* irregular 4—5-lobed. *Stamens* 4 didynamous, or 2; *anthers* 2-celled. *Ovary* 2—4-celled, 2—4-seeded. *Style* 1, terminal. *Stigma* bifid or entire. *Capsule* separating at length into 2—4 *achenes*, or indehiscent, or a *berry* with 1—4 *nucules*. *Albumen* 0. *Radicle* inferior. — Trees or shrubs or herbaceous plants. Leaves generally opposite. — The *teak* of the East Indies, extensively employed for ship-building, belongs to this Natural Order.

1. VERBÉNA *Linn.* Vervain.

Cal. tubular, with 5 teeth, one of them generally shorter than the rest. *Cor.* tubular, with the limb rather unequal, 5-cleft. *Stamens* included (very rarely only 2). *Ovary* 4-celled; *cells* 1-seeded. *Capsule* dividing into 4, 1-seeded *achenes*. — Name: *ferfaen* in Celtic; derived from *fer*, to drive away, and *faen*, a stone, from having been supposed to cure the complaint so called. *Théis*.

1. *V. officinális* *L.* (common *V.*); *stamens* 4, *stem* 4-angled erect somewhat hispid, leaves rough especially beneath shining above lanceolate inciso-serrate or trifid with the segments incise, spikes filiform somewhat paniced, flowers rather remote, bractæas ovate acuminate about half the length of the calyx. *E. B. t.* 767.

Road-sides and waste ground, frequent in England. Rare in Ireland. Inverkeithing, Scotland. *4.* 7—9.

ORD. LXV. LENTIBULARIACEÆ *Rich.*

Calyx divided. *Corolla* irregular, 2-lipped, with a spur. *Stamens* 2, from the base of the corolla. *Anthers* 1-celled. *Ovary* 1-celled. *Style* usually wanting or very short (rarely filiform). *Stigma* of 2 plates, upper one smaller, sometimes obso-

lete. *Capsule* with a large central *placenta*, bearing many *seeds*, which are very minute, without *albumen*.—*Small* herbaceous *marsh* plants, with leaves all *radical* and *undivided*; or *aquatic* plants, with *compound* root-like leaves bearing *bladders*.

1. PINGUICULA. Calyx 2-lipped, upper lip 3-lobed.
2. UTRICULARIA. Calyx bipartite, upper segment entire.

1. PINGUICULA Linn. Butterwort.

Cal. 2-lipped, lower lip bifid, upper of 3 segments. *Cor.* ringent. *Stigma* sessile. *Capsule* with 2 valves at the top.—Named from *pinguis*, *fat*; the leaves being thick and greasy to the touch.

1. *P. vulgaris* L. (*common B.*); spur subulate cylindrical nearly straight shorter than the veinless limb of the corolla whose segments are very unequal oblong-obovate rounded even diverging from each other and all entire, capsule ovate acute. *E. B. t.* 70.

Bogs, moist banks and heaths, most abundant in the North. *4.* 5—7.—*Foliage* radical, covered with minute raised crystalline points, fleshy, the margins involute. *Scapes* single-flowered, and the *calyx* somewhat downy. *Flowers* purple, very handsome, drooping; palate covered with white compactly jointed hairs. *Anthers* vertical, placed just beneath the large horizontal plate or lobe of the *stigma*. *Caps.* ovate, 1-celled, bursting half-way into 2 valves.—The leaves are said to coagulate milk, whence the English name.

2. *P. grandiflora* Lam. (*large-flowered B.*); spur subulate cylindrical often notched about as long as the veined limb of the corolla whose segments are very unequal broadly-obovate wavy contiguous or overlapping at the edges, the middle one of the lower lip notched, capsule ovate obtuse. *E. B. t.* 2184.

Western part of the county of Cork, in marshy ground; and at Kenmare. *4.* 5, 6.—This beautiful plant, apparently as rare upon the continent as in Britain, may be easily cultivated for a succession of years; like *P. vulgaris*, its old leaves die away in winter, and buds or hybernacula are formed, which expand into perfect individuals in the spring. This is probably only a variety of the last; Mr. Bentham indeed unites them: dried specimens are frequently doubtful.

3. *P. alpina* L. (*alpine B.*); spur conical shorter than the unequal limb of the corolla, and curved towards the lower retuse lip, scape glabrous, capsule acute. *E. B. S. t.* 2747.

Bogs in Scotland, very rare. Isle of Skye; Black Isle, Ross-shire. *4.* 6.—*Leaves* and *flowers* about the size of *P. Lusitanica*; but the texture of the foliage most resembles that of *P. vulgaris*. *Corolla* yellowish; within on the under side is a tuft of deep-yellow crystalline hairs. *Spur* remarkably short and conical, curved upwards.

4. *P. Lusitánica* L. (*pale B.*); spur cylindrical obtuse de-curved shorter than the almost equal limb of the corolla, leaves viny and as well as the scape hairy, capsule globose. *E. B.* t. 145.

Marshy places and wet moors, chiefly confined to the west side of the kingdom: never, we believe, found on the east side, and rarely in the interior. Plentiful in the Hebrides and Ireland, but most abundant in the extreme north of Scotland, near Cape Wrath. 4. 6—10.

2. *UTRICULÁRIA* Linn. Bladderwort.¹

Cal. bipartite, upper lobe entire, lower often notched or 2-toothed. *Cor.* personate. *Style* 0 (or filiform and persistent). *Stigma* 2-lipped. *Capsule* dehiscing irregularly. — Named from *utriculus*, a little bladder.

1. *U. vulgaris* L. (*greater B.*); spur conical straight or slightly curved obtuse about half the length of the corolla, the upper lip of which is as long as the projecting palate, sides of the lower lip recurved, leaves pinnato-multifid remotely spinulose, vesicles attached to the leaves. *E. B.* t. 253.

Ditches and deep pools, not unfrequent. 4. 6, 7. — *Roots* much branched. *Shoots* or *runners* floating horizontally in the water, clothed with capillary multifid leaves, bristly at the margin and bearing little crested bladders. *Scape* erect, 4—6 inches high, with 6—8 bright yellow flowers in a raceme. *Lower lip* convex much larger and broader than the upper one, and having a projecting palate closing the mouth. *Filaments* curved, thick, resembling those of *Pinguicula*. *Anthers* slightly cohering. *Stigma* large, ciliate.

[*U. neglecta* Lhm. a too closely allied species, differing chiefly by the upper lip of the cor. three times as long as the roundish palate, and anthers quite free, is said by Mr. Babington to be “apparently a native of the Fen Country:” of it we know nothing.]

2. *U. intermédia* Hayne (*intermediate B.*); spur conical acute pressed against the lower lip somewhat shorter than the corolla, the upper lip of which is entire twice as long as the palate, lower entire nearly flat, leaves tripartite their segments linear dichotomous ciliate, vesicles on leafless branches. *E. B.* t. 2489.

¹ The British species of this genus are all aquatics: and their roots, stems, and even leaves, are furnished with numerous membranous reticulate *vesicles*, which, according to Hayne, are filled with water, till it is necessary the plant should rise to the surface and expand its blossoms above that fluid. The vesicles are then found to contain only air, by aid of which the plant floats: this air again in autumn gives place to water, and the plant descends to ripen its seeds at the bottom. Mr. Wilson observes, with reference to the bladders of *U. vulgaris*, that “they have an orifice closed by an elastic valve, opening inwards, and of much thinner texture than the bladder, to which it is attached, where the crest is placed. Aquatic insects often enter these bladders, and are, of course, confined there.”

Ditches and deep pools, much less frequent than the preceding. Scotland Heath, Corfe Castle, Dorset. In Rescobie Lake, Forfar; also near Elgin. About Dublin and Bantry in Ireland. *Æ.* 6, 7. — This has probably been passed by as the *U. vulgaris*; but its flowers are fewer (only 2 or 3 on each scape), smaller, of a pale yellow, and have a longer upper lip. The stems are more leafy, and the bladders arise from branched stalks, not from the leaves. It propagates itself by buds or gemmæ which proceed from the ends of the shoots, and seldom flowers. At the season of flowering, however, Mr. Borrer finds the vesicles all immersed in the mud, and the leafy shoots floating under water. Mr. Bentham states that *E. B.* t. 2489 has been drawn from a barren plant of *U. minor*, while the flower is copied from a foreign plate: he is also of opinion that all the British specimens belong to the next species, and that it is even doubtful if the foreign ones be distinct.

3. *U. minor* L. (*lesser B.*); spur obtuse keeled deflexed much shorter than the corolla, the upper lip of which is notched and as long as the palate, lower lip obovate nearly flat, leaves subtripartite, the segments linear dichotomous glabrous, vesicles attached chiefly to the leaves. *E. B.* t. 254.

Ditches and pools, rare; not unfrequent in many parts of Scotland, extending its range even to Skye. *Æ.* 6—9.—Smaller than the last. Vesicles mixed with the leaves, which latter are glabrous at the margin. Flowers very pale yellow, and small. Spur scarcely any. Lower lip almost plane; palate scarcely closing the mouth, not projecting beyond the lip. Stigma glabrous.

ORD. LXVI. PRIMULACEÆ Vent.

Calyx 4—7-cleft. *Corolla* regular, 4—7-lobed (wanting in *Glaux*). *Stamens* as many as and alternate with the sepals, opposite to the lobes of the corolla. *Ovary* superior (or half inferior in *Samolus*), 1-celled, with the ovules upon a large free central placenta. *Style* 1. *Stigma* capitate. *Fruit* a capsule. *Seeds* usually peltate. *Embryo* usually transverse (parallel to the hilum); very rarely (in *Hottonia*) erect, with the radicle close to the hilum. *Albumen* fleshy.—Herbaceous plants, chiefly of the colder and temperate regions.

* *Ovary superior.*

† *Calyx divided almost to the base.*

8. CENTUNCULUS. Cal. 4-partite. Cor. with a subglobose tube. Stam. glabrous. Caps. opening transversely.
7. ANAGALLIS. Cal. 5-partite. Cor. rotate or widely funnel-shaped. Stamens hairy. Caps. opening transversely.
1. HOTTONIA. Cal. 5-partite. Cor. salver-shaped. Caps. with valves connected at the summit.
6. LYSIMACHIA. Cal. 5-partite. Cor. rotate. Stam. glabrous or glandular. Caps. opening at the summit with 5—10 teeth or valves.

5. TRIENTALIS. Cal. about 7-partite. Cor. rotate. Stam. glabrous. Caps. opening to the base with revolute fugacious valves.

†† Cal. tubular or campanulate.

2. PRIMULA. Cal. tubular or campanulate, herbaceous. Cor. salver-shaped; limb spreading.
3. CYCLAMEN. Cal. campanulate, herbaceous. Limb of cor. closely reflexed.
4. GLAUX. Cal. campanulate, coloured. Cor. wanting.

** Ovary half-inferior.

9. SAMOLUS. Cor. salver-shaped.

A. Capsule superior, opening by valves which remain connected at the apex. Seeds with the hilum at the base, and an erect embryo. HOTTONIÆ. (Gen. 1.)

1. HOTTONIA Linn. Water-Violet.

Cal. 5-partite. Cor. salver-shaped, with a short tube, and flat limb. Stamens 5, glabrous, inserted into the tube, included. Stigma globose. Caps. globose, crowned with the persistent style, splitting laterally into 5 valves which remain connected at the base and summit. Seeds very numerous. — Named after Pierre Hotton, a professor at Leyden during the latter half of the 17th century.

1. *H. palustris* L. (common W., or Featherfoil); flowers whorled on a long solitary cylindrical stalk, corolla longer than the calyx, leaves pectinate. *E. B.* t. 364.

Ditches and pools in England, but not found in Scotland. Downpatrick, Ireland. 4. 5, 6. — Root creeping. Leaves all submerged. Flowers large, handsome, pale purple, rising above the water.

B. Capsule superior, opening at the apex by valves or teeth. Seeds peltate; embryo transverse. PRIMULÆ. (Gen. 2—6.)

2. PRIMULA Linn. Primrose. Oxlip. Cowslip.

Cal. tubular or campanulate, 5-toothed. Cor. salver-shaped, its tube cylindrical, its mouth open. Caps. opening with 10 teeth. — Named from *primus*, first, on account of the early appearance of the flowers in the most common species; in France *primevère*.

1. *P. vulgaris* Huds. (common P.); leaves obovate-oblong crenate-toothed wrinkled, scape umbellate usually sessile sometimes on a common stalk, flowers erect, calyx tubular somewhat inflated teeth linear-lanceolate attenuate very acute, limb of the corolla flat, tube with a circle of scale-like folds at the slightly contracted mouth. — *a.* umbel sessile among the leaves.

E. B. t. 4. *P. acaulis* Jacq. *P. grandiflora* Lam. *P. veris* γ. *acaulis* L. — β. umbel stalked.

Woods, hedge-banks, and pastures, abundant. 4. 4, 5.—If the *flower-stalks* of the var. α., or common form, are traced to their very base, they will be found to spring from one common point, and to constitute a sessile *umbel*. The var. β. is the *polyanthus* of our gardens, and often supposed to be *P. elatior*.

2. *P. elatior* Jacq. (*Jacquin's O.*); leaves ovate toothed wrinkled contracted below the middle, scape umbellate, outer flowers drooping, calyx tubular usually close to the tube of the corolla, teeth lanceolate acute, limb of the corolla slightly concave, tube open at the mouth without scales or folds. *E. B. t. 513.* *P. veris* β. *elatior* L.

Woods and meadows in the eastern counties of England, particularly about Bardfield in Essex. Hitcham, Suffolk. 4. 4, 5.—We are not satisfied that this species is really distinct from the numerous hybrids between *P. vulgaris* and *P. veris*. Mr. Bentham unites the three.

3. *P. veris* L. (*common C.*, or *Paigle*); leaves ovate crenate-toothed wrinkled contracted below the middle, scape umbellate, flowers drooping, calyx tubular campanulate, teeth short ovate, limb of the corolla concave, tube with a circle of scale-like folds at the slightly contracted mouth. *E. B. t. 5.* *P. officinalis* Jacq.

Meadows and pastures, frequent in a clay soil in England, Rare in Scotland; near Edinburgh, and in Fifeshire. 4. 4, 5,—On the continent the present species and *P. vulgaris* never grow intermingled, and constantly retain the characters assigned to them: in England, however, (and in Scotland wherever *P. veris* occurs,) they are found together, and a complete series of intermediate forms, constituting the common Oxlip, may be observed, which must either be accounted fertile hybrids, or proofs of the two extremes being only different races of the same species. If this latter view be adopted, the *P. elatior* may rank as a third and connecting race. Speaking of the two extremes, Mr. H. C. Watson says, “the two may be pretty accurately distinguished, each having a variety ‘*elatior*.’ Independently of other characters, all the *Cowslips* and *Cowslip-Oxlips* have the scape and calyx *tomentose*; whilst *Primroses* and *Primrose-Oxlips* have long soft hairs, and should be called *villose* or *shaggy*.”

4. *P. farinosa* L. (*Bird's-eye P.*); leaves obovate lanceolate mealy crenulate, calyx oblong-ovate, limb of the corolla plane its mouth obscurely glandular, the segments obcordate distant attenuate at the base nearly as long as the tube. *E. B. t. 6.*

Mountainous pastures in the north of England, especially Yorkshire, not unfrequent. Very rare in Scotland; south of West Linton, near Edinburgh. 4. 6, 7.—One of the most elegant of plants, scarcely yielding in beauty to the next species. The powdery sub-

stance on the leaves, scape, and calyx, has a musky smell. *Flowers* pale lilac-purple, with a yellow eye.

5. *P. Scótica* Hook. (*Scottish P.*); leaves obovato-lanceolate mealy denticulate, calyx ventricose, limb of the corolla flat, its mouth glandular, the segments broadly obcordate approximate half the length of the tube. *E. B. S.* t. 2608.

North coast of Caithness. Frequent also on the north coast of Sutherland, and in the Orkney Islands, growing upon the sandy shores. 4. 7. — To us this appears a distinct species, but M. Duby and Mr. Benthham are of a contrary opinion. It is not half the size of the preceding, but has a stouter habit. *Flowers* deep bluish-purple, with a yellow eye. In *P. farinosa*, the *germen* is broadly obovate and the *stigma* capitate; here the *germen* is globose, and the *stigma* has 5 points.

3. *CYCLAMEN* Linn. Sow-bread.

Cal. campanulate, half 5-cleft. *Cor.* rotate; the mouth prominent, the segments reflexed. *Stamens* 5, included. *Caps.*, globose, 1-celled, opening with 5 teeth. — Named from *κύκλος* a circle; probably from the circles formed by the spiral peduncles: in French *pain de porceau*, and in English *sow-bread*; because the large tuberous roots are eagerly sought by swine, notwithstanding their highly acrid nature.

1. *C. *hederafólium* Willd. (*Sow-bread*); leaves heart-shaped angular finely toothed their ribs and footstalks roughish, tube of the corolla globose, mouth 5-angled "with lunulate 10-toothed sides." *C. Europæum* Sm.: *E. B.* t. 548.

On a bank at Bramfield, Suffolk; near Sandhurst (in profusion), and Goudhurst, Kent; Sussex; Pembroke; Notts (plentiful). 4. 9. — *Leaves* springing from the top of the large tuberous under-ground stem. *Cor.* white or flesh-coloured. *Scapes* spirally twisted after flowering, so as to bury the *seed-vessels* in the earth. Probably some of the above stations may belong to *C. Europæum*, as suggested by Mr. H. Watson; our own specimens indeed are too few and imperfect to permit us to ascertain correctly the species. But the whole genus is a southern and eastern one, not even occurring in the Flora of Paris; and none of the species can have any claims to be admitted as indigenous, if indeed any can properly be said to be naturalized in this country.

4. *GLAUX* Linn. Sea-Milkwort.

Cal. campanulate, coloured, of 1 piece, 5-lobed. *Cor.* none. *Stam.* 5, glabrous. *Caps.* superior, globose, 5-valved, with about 5 seeds. — Name: *γλαυξ*, a plant so called from its colour being *γλαυκος* or *sea-green*.

1. *G. marítima* L. (*Sea M.*, or *black Saltwort*): *E. B.* t. 13.

Sea-shore and muddy salt-marshes, abundant. 4. 6, 7. — *Stems* 2—4 or even 10 inches long, stout, branched, often procumbent. *Leaves* opposite, ovate, glabrous, fleshy, entire, sessile, small. *Flowers* sessile, solitary, axillary, rose-coloured, with 5 obtuse spreading lobes.

5. *TRIENTÁLIS* Linn. Chickweed Winter-green.

Cal. about 7- (5—9-) partite. *Cor.* rotate; *tube* very short; *limb* of as many deep flat divisions as the calyx. *Stam.* as many as the sepals beardless. *Caps.* opening to the base with 5—9 recurved fugacious valves. *Seeds* with a reticulated tunic.—Name supposed to be the same as *trientalis*, the *third* part of a foot, or 4 inches, such being the usual height of the plant.

1. *T. Europæa* L. (*European C.*); leaves oblong-obovate obtuse. *E. B.* t. 15.

Woods in the north of England, rare. Abundant in many parts of the Highlands of Scotland. Not found in Ireland. 4. 6.—*Rhizome* filiform, creeping. *Stems* 4—6 inches high, with 2 or 3 small distant leaves, and 4—7 terminal whorled larger ones, from the centre of which arise 1—4 slender single-flowered *peduncles*. *Cal.-leaflets* almost subulate, varying in number from 6 to 9, as do all the other parts of the flower and the valves of the capsule. The beautiful covering, like the finest white lace, of its *seeds*, has been taken for a pericarp by botanists who had not seen the very fugacious horny *valves* of its *capsule*.

6. *LYSIMÁCHIA* Linn. Loose-strife.

Cal. 5-partite. *Cor.* rotate. *Stam.* 5—6, not distinctly hairy, sometimes with alternating sterile filaments. *Caps.* 1-celled, 5—10-valved.—Named in honour of king *Lysimachus*, according to some; according to others, from *λυσις*, a *dissolving*, and *μαχη*, *battle*. The English name, it will be at once seen, has a similar meaning. Pliny says it tames restiff horses.

1. *L. vulgaris* L. (*great yellow L.*); stem erect, leaves ovato-lanceolate nearly sessile opposite or ter-quaternate, panicles compound terminal and axillary, lobes of the corolla ovate obtuse quite entire, stamens 5 unequal combined for half their length into a glandular tube without sterile ones. *E. B.* t. 761.

Sides of rivers and wet shady places, less frequent in Scotland. 4. 7, 8. — *Stem* erect, 2—3 ft. high. *Leaves* nearly sessile, glabrous or downy beneath. *Panicle* leafy, usually much branched. *Corollas* large, yellow, handsome.

2. *L. punctáta* L. (*spotted-leaved L.*); stem erect, leaves ovato-lanceolate nearly sessile opposite or verticillate, peduncles axillary usually 1-flowered sometimes slightly branched, lobes of the corolla ovate ciliate with minute glandular hairs, stamens 5 combined for half their length into a glandular tube without sterile ones. *L. Westphalica*, *Gard. Chron.* 1854, p. 614.

Wet places in the north-west of England and south-west of Scotland: *Benth.* Dulverton, Devon: *Bab.* 2. 6—8.—We have seen no British specimen. Mr. Benth. says it grows mixed with *L. vulgaris*; and he unites the two. The character derived from the fringe of the corolla is of no importance; and that of the inflorescence not to be much relied upon, especially as the peduncles of *L. vulgaris* are sometimes almost simple.

[*L. ciliata* L. (*E. B. S. t.* 2922), has been naturalized in several places; it is a truly North-American species; its stems are erect, peduncles axillary racemose, leaves ovato-lanceolate, subcordate with ciliate petioles, lobes of the corolla crenate, and there are 10 filaments, all distinct, of which 5 are sterile.]

3. *L. thyrsiflora* L. (*tufted L.*); erect simple, leaves opposite lanceolate sessile, racemes dense many-flowered stalked axillary, segments of the corolla linear-spathulate quite entire, sterile filaments none. *E. B. t.* 176. Naumbergia *Duby.*

Wet marshes and water-sides, very rare in England; Yorkshire, Herefordshire, and Anglesea. More frequent in Scotland: near Forfar, and at Duddingston Loch, on the east coast; canal-side near Possil, and near Rossdhu, by Loch Lomond, in the former place most abundant, and growing in the water. 2. 7.—*Stems* 1—2 ft. high. *Flowers* numerous, small, collected into dense, axillary, peduncled racemes. Number of the parts of the flower very variable, oftener 6 than 5. *Cor.* deeply cut into very narrow segments, separated by a minute tooth, yellow, and, as well as the *cal.*, spotted with orange. *Stamens* slightly united at the very base; *anthers* cordate.

4. *L. nemorum* L. (*yellow Pimpernel*, or *Wood L.*); leaves ovate acute opposite shortly stalked, stem prostrate, peduncles 1-flowered axillary solitary longer than the leaves, calycine segments linear-subulate, stamens smooth distinct. *E. B. t.* 527.

Woods and shady places, frequent. 2. 5—8.

5. *L. Nummularia* L. (*creeping L.*, *Money-wort*, or *Herb-Twopence*); leaves opposite subcordate or ovate obtuse shortly stalked, stem prostrate creeping, peduncles 1-flowered axillary solitary shorter than the leaves, calycine segments ovate acute, filaments glandular connected at the base. *E. B. t.* 528.

Shady places and pastures. Commonly cultivated, but scarcely indigenous, in Scotland. 2. 6, 7.

C. Capsule superior, opening transversely. ANAGALLIDÆ.
(Gen. 7, 8.)

7. ANAGALLIS Linn. Pimpernel.

Cal. 5-partite. *Cor.* nearly rotate. *Stamens* 5, hairy. *Capsule* bursting all round transversely.—Named from *ana*, again, and *αγαλλω*, to adorn; from these plants re-adorning, every

spring, the fields and road-sides with their beautiful blossoms : for the same reason a *hyacinth* was called *αγαλλίς*.

1. *A. arvensis* L. (scarlet *P.* or *Poor Man's Weather-glass*) ; stems ascending or subprocumbent branched, leaves opposite or ternate ovate sessile dotted beneath, peduncles longer than the leaves, calyx nearly as long as the rotate corolla. — *α.* margin of the corolla crenate piloso-glandulose. *E. B.* t. 529. — *β.* *cærulea* ; margins of the corolla toothed scarcely at all glandulose. *A. cærulea* Schreb. ; *E. B.* t. 1823.

Corn-fields, frequent. — *β.* rare in similar situations, and principally in England. ☉. 5—11. — *Flowers* generally bright scarlet, sometimes blue, sometimes flesh-coloured ; and Mr. Dillwyn Llewellyn has found, at Penllengare, S. Wales, specimens with the flowers pure white, and a small, well-defined, bright purplish-pink eye in the centre of every corolla. The Rev. Professor Henslow has proved, by cultivation from seed, that *A. cærulea* and *A. arvensis* are varieties of the same species ; on the other hand, Mr. Borrer is of opinion that our two varieties are distinct species, but that each varies with the same tints of colour.

2. *A. tenella* L. (*Bog P.*) ; stem creeping filiform, leaves opposite ovate or roundish stalked, peduncles longer than the leaves, calyx four times shorter than the broadly and widely funnel-shaped corolla. *E. B.* t. 530.

Wet mossy bogs, frequent in England, more rare in Scotland. 4 7, 8. — A beautiful little plant, as are all of this genus, 2—4 inches long. *Leaves* small. *Flowers* large in proportion to the size of the plant, on rather long footstalks. *Cor.* rose-colour. *Filaments* slightly connected at the base.

8. CENTUNCULUS Linn. Chaffweed.

Cal. 4-partite. *Cor.* with a globose inflated tube ; limb spreading, 4-partite. *Stam.* 4, short, beardless. *Cups.* bursting all round transversely. (*Leaves* alternate. *Flowers* sessile.) — Name, it appears, anciently given to the *pimpernel*, a genus allied to this ; and derived, according to Théis, from *cento*, a *patchwork*, from the way in which it covers the ground.

1. *C. minimus* L. (*small C.*, or *Bastard Pimpernel*) ; leaves ovate mucronate sessile. *E. B.* t. 531.

Moist sandy or gravelly places about London, in Kent, Bedfordshire, Norfolk, Suffolk, Hampshire, the south of Ireland, and Lowlands of Scotland, but not frequent ; probably, however, often overlooked on account of its small size. ☉. 6, 7. — Plant 1—2 inches high, more or less branched. *Leaves* alternate, ovate, glabrous. *Flowers* extremely minute, sessile, axillary, solitary. *Cor.* pale rose-colour, withering. Perhaps the only species of the genus, *C. lanceolatus* of N. America being scarcely distinct.

D. *Capsule half-superior, opening by valves. Embryo transverse.*
SAMOLEÆ. (Gen. 9.)

9. *SÁMOLUS* Linn. Brookweed.

Cal. 5-cleft. *Cor.* salver-shaped, its *tube* short, with 5 scales (imperfect *stamens*) at its mouth, alternating with the lobes. *Capsule* half inferior, opening with 5 valves.—Name, according to Pliny, an ancient Druidical one for some now unknown marsh-plant, possessed of wonderful sanatory properties; probably the same as *slan-lus*, in Celtic, *the healing herb*, or *all-heal*, imitated in Latin by *sámolus*, as if derived from *sanus*, *whole*.

1. *S. Valerándi* (*Brookweed*, L. or *Water Pimpernel*); leaves obtuse, racemes many-flowered, pedicels with a small bractea. *E. B.* t. 703.

Marshy and watery places, especially in a gravelly soil. In Scotland always near the sea and chiefly on the west coast. γ . 6—9. —A plant very generally dispersed throughout the world. *Stem* 8—10 inches high, nearly terete, glabrous, as are the ovate, subpetiolate, entire, fleshy *leaves*. *Flowers* small, white. *Cal.* small, 5-cleft, persistent; its segments crowning the subglobose *capsule*.

ORD. LXVII. PLUMBAGINACEÆ Juss.

Calyx tubular. *Corolla* regular, of 5 united or distinct *petals*. *Stam.* hypogynous or inserted upon the corolla. *Ovary* solitary, 1-celled, with one *ovule* suspended from the apex of a stalk arising from the base of the cell. *Styles* 5, sometimes united to the middle or to the summit. *Stigmas* 5. *Capsule* indehiscent or opening irregularly, 1-seeded. *Embryo* straight in the axis of farinaceous *albumen*.—*Herbaceous* or somewhat *shrubby* plants. *Flowers* often *capitate* or *spiked*.

1. ARMERIA. Styles hairy. Scapes simple: flowers capitate.
2. STATICE. Styles glabrous. Scapes paniced.

1. ARMÉRIA Willd. Thrift. Sea-Pink.

Cal. funnel-shaped, plaited, dry and membranous. *Pet.* united at the base, bearing the stamens. *Styles* distinct, hairy: *stigmas* filiform, glandular. (*Flowers* collected into a bracteate rounded head with an inverted cylindrical sheath.)—Name: *Flos Armeria* was applied by the botanists of the middle ages to some of the Sweet-William pinks, and is, according to Clusius, the French word *armoiries* Latinized.

1. *A. vulgáris* Willd. (*common T.* or *S.*, or *Sea-Gilliflower*); leaves linear 1-nerved, awns of the calyx short. *A. maritima* Willd. *Statice Armeria* L.— α . leaves flattish above, calyx-tube uniformly hairy. *A. maritima* Boiss.— β . leaves flattish above, calyx-tube hairy on the ribs glabrous between them.

A. pubescens Link. *Statice Armeria* Sm.: *E. B.* t. 226.— γ . leaves grooved and dotted above, calyx-tube uniformly hairy. *A. pubigera* β . Boiss. — δ . leaves grooved above, calyx-tube hairy on the ribs only. *A. duriuscula* Bab.

Muddy sea-shores, and among rocks by the sea-side.— β . also near the tops of our highest mountains.— δ . rare. γ . 4—9.—*Leaves* all radical, numerous. *Heads* of flowers rose-coloured or white, intermixed with scales, and having, besides, a brown membranous involucre of several leaves, terminating below in a sheathing jagged covering to the upper part of the scape, which is usually downy, but sometimes glabrous.

2. *A. plantaginæa* Willd. (*Plantain-leaved T.*); leaves linear-lanceolate 3—5-nerved, awns of the calyx long. *E. B. S.* t. 2928. *Statice plantaginæa* All.

Abundant in the sandy district of Quenvais, on the west side of the Island of Jersey. γ . 6, 7.—This is readily distinguished from the last by the broad leaves, and long setaceous teeth to the calyx. *Flowers* pale purple.

2. STATICE Linn. Sea-Lavender.

Cal. funnel-shaped, plaited, dry and membranous. *Pet.* united at the base, bearing the stamens. *Styles* distinct, glabrous: *stigmas* filiform, glandular. (*Flowers* in unilateral spikes on a panicled scape.)—Named from $\sigma\tau\alpha\tau\iota\zeta\omega$, to stop; having been employed, from its astringent qualities, to check dysentery.

1. *S. Limónium* L. (*spreading-spiked S.*); leaves elliptic-lanceolate stalked mucronate single-ribbed, scape with a much-branched spreading corymb at the top, branches curved outwards, spikes short densely flowered, calyx-segments acute with intermediate teeth. *E. B.* t. 102.

Frequent on the muddy shores and salt-marshes of England. Rare in Scotland, and perhaps found only about Berwick-upon-Tweed. γ . 7—9.—*Leaves* 4 inches to a span high, $\frac{1}{2}$ or $\frac{3}{4}$ as tall as the scape, single-ribbed with lateral oblique veins, mucronate: the mucro is recurved, being “a continuation of the margin of the leaf, and is channelled. *Scape* angular, often furrowed above, with a coarse uneven surface.” *Panicle* truly corymbose and level-topped, with spreading or sometimes recurved densely flowered branches, in which respect this species appears chiefly to differ from the following.

2. *S. Bahusiensis* Fries (*remote-flowered S.*); leaves oblong-lanceolate stalked mucronate single-ribbed faintly nerved, scape much branched from near the base panicled, branches ascending or incurved, spikes elongated with rather distant flowers, calyx-segments acute with intermediate teeth. *S. rariflora* Drej.: *E. B. S.* t. 2917.

Muddy shores, more widely distributed than the last. Chichester

Creek, Sussex; Fareham Creek, &c., near Portsmouth; Devonshire; Kent; Suffolk. Wigton and Kirkcudbrightshire, Scotland. Galway, Ireland. 2. 7, 8.—Too nearly allied to *S. Limonium*, to which indeed it is united by Mr. Benth.

3. *S. binervosa* G. E. Sm. (*upright-spiked S.*); leaves spatulate narrowed into a winged stalk more or less mucronate somewhat 3-nerved at the base, scape branched from below the middle, panicle elongated, branches distichous, spikes erect, calyx with plane blunt segments without intermediate teeth, *E. B. S.* t. 2663. *S. cordata* G. E. Smith in *Cat. of Pl. of Kent*, p. 18. t. 2. f. 2 (vix *Linn.*) *S. spathulata* Hook. *Brit. Fl.* *S. Limonium* β. *E. Fl.* v. ii. p. 116. *S. auriculæfolia* Benth. (scarcely of *Vahl*).

On rocks and cliffs near the sea. Coast of Kent in several places; Harwich; rocks near Holyhead; St. Bees' Head, near Whitehaven; Devon; Somerset. Mull of Galloway, and south of Clanyardfell, Wigtonshire; Scotland. Dublin, Waterford, and north of Ireland. Jersey and Guernsey. 2. 7, 8.—This has been divided into two species by Boissier: 1. *S. Dodartii* Gir., sterile branches none, spikes thick and densely imbricated; 2. *S. occidentalis* Lloyd, a few of the lower branches sterile, spikes slender. We find every intermediate form among our British specimens: it is true that Boissier adduces some other characters, but these we cannot perceive in any of them. Mr. Babington (*Annu. and Mag. Nat. Hist.* 3rd ser., vi. p. 403) considers that he has at length obtained the true *S. Dodartii* from Portland, Dorset, found by Prof. Henslow; but he has given no description, and we have seen no specimens. According to Boissier, who had examined the specimens, the *S. spathulata* of Desfontaines is quite a different species, although the characters sufficiently accord. We adhere to the appellation given by G. E. Smith, in preference to the much more modern one of Lloyd, adopted by Boissier in *De Candolle's Prodrômus*. The *mucro* of the *leaves* is small, always or usually dorsal just below the extremity.

4. *S. Cáspia* Willd. (*matted S.*); leaves spatulate, scapes paniculated almost from the base with numerous slender zigzag distinctly bracteated branches, of which the upper ones only bear flowers, axils of the branches acute-angled, flowers crowded, calyx with ovate cuspidate toothed segments without intermediate teeth. *S. reticulata* Sm. (not *Linn. Sp. Pl.*) *E. B.* t. 328.

Muddy salt-marshes, rare. Norfolk, principally at Cley and Wisbeach. 2. 7, 8.—Much smaller than either of the two last, with very short *leaves*. *Scapes* several from the same root, remarkable for their numerous, slender, entangled, barren branches, and small crowded *flowers*, in distichous terminal *spikes*. *S. reticulata* L., a Maltese plant, as far as regards the character in the *Species Plantarum* and reference to the figures in Boccone and Plukenet, is, according to Boissier, the *S. cancellata* Bernh., a species with acute lobes to the

calyx; we do not know what is preserved in the Linnean herbarium. The identity of the British plant with *S. Caspia* Willd. was pointed out in former editions of this Flora.

ORD. LXVIII. PLANTAGINACEÆ Juss.

Sometimes monœcious. *Calyx* (of the perfect and staminate flowers) 4-partite. *Corolla* membranous, 4-lobed. *Stamens* 4, or rarely 1, alternate with the segments of the *corolla*. *Filaments* exserted. *Ovary* 1-celled with 1 *ovule*, or 2- or 4-celled with 1 or more *ovules* in each cell. *Style* and *stigma* simple, the latter rarely divided. *Capsule* opening transversely, 2- or 4-celled, with 2—4 or many *seeds*; or hard and indehiscent, 1-celled, 1-seeded. *Seeds* peltate, inserted on the dissepiments or at the base of the cell, rarely erect. *Embryo* in a fleshy or horny *albumen*.—*Slightly bitter and astringent*. *Seeds mucilaginous*.

1. PLANTAGO. Flowers perfect. Stamens inserted upon the tube of the corolla. Caps. dehiscent, 2—4-seeded.
2. LITTORELLA. Flowers imperfect. Stamens hypogynous. Fruit bony, indehiscent, 1-seeded.

1. PLANTÁGO Linn. Plantain.

Flowers perfect. *Cor.* with an ovate *tube*; *limb* 4-partite, reflexed. *Stam.* 4, inserted upon the tube of the corolla. *Caps.* opening transversely, of 2—4 cells, 2—4- or many-seeded.—A classic name, the origin of which is unknown. All the species are mucilaginous and astringent.

1. *P. mǎjor* L. (*greater P.*); leaves broadly ovate mostly on longish grooved foot-stalks, scape terete, spikes cylindrical, sepals with a prominent dorsal nerve, capsule 2-celled with the dissepiment plane, each cell many seeded. — *α.* scape longer than the leaves, spike elongated dense many-flowered. *E. B. t.* 1558. — *β.* *microstachya*; scape shorter than the leaves, spike lax with 3—6 flowers.

Pastures and road-sides frequent. — *β.* Turf-bogs, Connemara, Ireland. *γ.* 6—8. — *Leaves* all radical, more or less spreading, with 7 (or in *β.* 3) nerves, entire or toothed, glabrous or pubescent. *Petioles* varying in length, sometimes as long as the leaf. At the base of each flower is a concave *bractea*. *Cal.* of 4 minute *leaflets*. *Caps.* ovate, with 4—8 *seeds* in each cell.

2. *P. média* L. (*hoary P.*); leaves elliptical pubescent sessile or tapering into short and broad foot-stalks, scape terete, spike cylindrical, sepals not keeled, capsule 2-celled with the dissepiment plane, cells 1-seeded. *E. B. t.* 1559.

Meadows and pastures in chalky districts in England. Not

indigenous in Scotland, but occasionally observed where it had been introduced with grass seeds. \mathcal{L} . 6—10. — *Stamens* long, with dark purple *filaments*. *Spike* shorter than in *P. major*, and more silvery from the shining scarious *corollas*; but a more essential difference exists in the *cells* of the *capsule*, which are only 1-seeded.

3. *P. lanceolata* L. (*Ribwort P.*); leaves lanceolate tapering at both ends, scape angular, spike ovate or cylindrical, bracteas ovate acute or cuspidate, sepals nearly glabrous, two of them keeled the other two united, capsule 2-celled with the dissepiment plane, cells 1-seeded. *E. B. t.* 507.

Meadows and pastures, often too abundant. \mathcal{L} . 6, 7. — The *leaves* and *scapes* yield strong fibres. The *spike* has its bracteas occasionally, by luxuriance, converted into leaves; and sometimes a new scape and spike grow out horizontally from among the bracteas. The spike varies much in form: it is usually short, ovate, or oblong-cylindrical; but in sandy places, at a considerable elevation on the mountains, becomes quite globose: on the other hand, there is a luxuriant variety (*P. altissima* L.), found at Lamb-islet, Bay of Dublin, with the scape often 2 feet high, and the spike very long, and truly cylindrical. *P. Lagopus* L., a closely allied species, but differing by being annual, and the sepals villous at the apex, has been found at Wandsworth, Surrey, but must have been introduced; on the continent it seems confined to the region of the Mediterranean.

4. *P. maritima* L. (*Sea-side P.*); leaves linear or linear-lanceolate fleshy, scape terete, spike cylindrical, bracteas ovate-acuminate, sepals not winged, tube of the corolla pubescent, capsule 2-celled with the dissepiment plane, cells 1-seeded.— α . leaves linear grooved convex below glabrous except at the base. *E. B. t.* 175. — β . *major*; leaves almost plane inclining to lanceolate toothed glabrous, scape densely hairy.— γ . *minor*; leaves linear-lanceolate densely hairy as well as the scape.

Grassy pastures and rocks by the sea-side; frequent near the margin of fresh-water lakes, and at the base of the mountains sloping down to them, as in Glen Dochart, Glen Lochy, and by Loch-Lomond; also on the tops of the highest mountains. — β on the island of Cumbræ, among rocks.— γ . on rocks by the House of Skail, Pomona, Orkney. \mathcal{L} . 6—9. — Varying much in size and in the breadth and hairiness of its *leaves* and *scapes*; sometimes the *leaves* are almost filiform, often lanceolate; in the curious *var. \gamma*. found in Orkney, they are clothed with short dense hairs; they are always very succulent, and either entire or toothed.

5. *P. Corónopus* L. (*Buck's-horn P.*); leaves linear pinnatifid or toothed, scape terete, bracteas ovate-subulate, lateral sepals with a ciliate membranous wing at the back, dissepiment of the capsule with 4 angles (thus forming 4 cells), cells 1-seeded. *E. B. t.* 892.

Gravelly sterile soils, inland and upon the coast. ☉. 6, 7.—

Leaves mostly spreading, very variable in size and pubescence, pinnatifid; segments often toothed or again divided. *Scape* hairy. *Spike* mostly cylindrical and slender. In small specimens from Staffa the spike is ovate, composed of not more than 7 or 8 flowers; whilst the leaves and scapes are quite hispid.

2. LITTORÉLLA Linn. Shore-weed.

Monœcious. — *Barren fl.* *Cal.* of 4 leaves. *Cor.* 4-fid, tube cylindrical. *Stam.* 4, hypogynous. — *Fertile fl.* *Cal.* 0 (unless three bractæas can be so called). *Cor.* urceolate, contracted at the mouth, 3—4-cleft. *Style* very long. *Fruit* hard and somewhat bony, indehiscent, 1-celled, 1-seeded. — Named from *littus*, the shore, its place of growth.

1. *L. lacustris* L. (*Plantain S.*): *E. B.* t. 468.

In watery, sandy, and stony places; particularly abundant on the margins of the Highland lakes, where it forms a green turf. *Fl.* 6. — *Leaves* all radical, linear, fleshy, semicylindrical, about 2 inches long. *Sterile flowers* solitary or sometimes 2 (*Mr. W. Wilson*) upon a *scape* 2—3 inches long. *Fertile fl.* sessile in the axils of the leaves, surrounding the sterile peduncles. *Germen* oblong, green. *Style* very long, filiform. *Stigma* a mere point.

SUB-CLASS IV. MONOCHLAMYDEÆ.¹ (ORD. LXIX.—LXXXVII.)

Flowers incomplete. Perianth single; in other words, the Calyx and Corolla forming but one floral covering, or altogether wanting.

CONSPECTUS OF THE ORDERS.

A. *Barren flowers neither in catkins nor cones; fruit not surrounded by a hardened or prickly involucre. Style or stigma present.*

* *Ovaries superior, several, distinct, each 1-celled.*

[1. RANUNCULACEÆ. Stamens hypogynous. Leaves without stipules.
27. ROSACEÆ. § SANGUISORBIDÆ. Stamens perigynous. Stipules cohering with the petiole.]

** *Ovary superior, solitary, 1-celled.*

† *Ovules 5 or more. Fruit capsular, opening by valves.*

[66. PRIMULACEÆ. Perianth campanulate. Style 1.
14. CARYOPHYLLACEÆ. § ALSINEÆ. Sepals distinct or nearly so. Styles several.]

†† *Ovule solitary (or rarely 2). Fruit indehiscent. Leaves with stipules.*

72. POLYGONACEÆ. Stipules forming a sheath round the stem or branch.

¹ From *μῶνος*, one, or single; and *χλαμύς*, a tunic, or garment.

- [27. ROSACEÆ. § SANGUISORBIDÆ. Stipules cohering with the petiole.
 34. PARONYCHIACEÆ. Stipules free, membranous, permanent. Flowers perfect.]
 80. URTICACEÆ. Stipules free, membranous, usually deciduous. Flowers all or some imperfect.

††† *Ovule solitary. Fruit indehiscent or bursting transversely. Leaves without stipules.*

79. CERATOPHYLLACEÆ. Perianth 0. Involucre 10—12-cleft. Embryo straight. Floating plants.
 70. CHENOPODIACEÆ. Perianth 3—5-cleft and herbaceous, or imbedded in the rachis and fleshy. Stameus nearly hypogynous. Fruit an indehiscent utriculus. Embryo curved. Terrestrial plants.
 69. AMARANTHACEÆ. Perianth 3-partite (nearly scarious), with external bracteas. Stamens hypogynous. Fruit opening transversely near the base. Terrestrial herbaceous plants.
 71. SCLERANTHACEÆ. Perianth tubular, persistent, at length dry and hardened. Stam. perigynous. Styles 2. Embryo annular. Herbs.
 82. ELEAGNACEÆ. Perianth of the fruit tubular, persistent, at length succulent. Style 1. Embryo straight. Leaves with shining scales beneath. Shrubs.
 73. THYMELACEÆ. Perianth tubular, deciduous. Stamens perigynous. Style 1. Embryo straight. Bark tough. Shrubs.

*** *Ovary superior, solitary, with 2 or more cells.*

† *Fruit 4-lobed and separating into 4 achenes, or capsular, never samaroid.*

- [52. MONOTROPACEÆ. Flowers perfect. Cal. 5-sepaled. Stam. 10, hypogynous. Style 1, entire. Seeds many in each cell.
 30. LYTHRACEÆ. Flowers perfect. Cal. campanulate, toothed. Stam. 6, perigynous. Style 1, entire. Seeds many in each cell.]
 78. CALLITRICHACEÆ. Perianth 0. Styles 2. Fruit of 4 indehiscent 1-seeded carpels united at the axis, and at length separating.
 77. EUPHORBIACEÆ. Flowers imperfect. Styles 2—3. Fruit capsular.

†† *Fruit indehiscent.*

76. EMPETRACEÆ. Flowers imperfect. Perianth of 2 or more rows of imbricated scales. Stam. about 3. Fruit fleshy. Leaves heath-like.
 [54. OLEACEÆ. Perianth 4-cleft or none. Stam 2. Style 1. Fruit samaroid. Leaves opposite, without stipules.]
 81. ULMACEÆ. Perianth about 5-cleft. Stam. 5 or more. Fruit samaroid. Leaves flat, alternate, with stipules.
 [25. RHAMNACEÆ. Perianth 4—5-cleft. Stam. 4—5. Fruit fleshy. Leaves flat.]

**** *Ovary inferior, its cells many-seeded.*

- [37. SAXIFRAGACEÆ. Stam. 8—10. Styles 2. Ovary imperfectly 2-celled.
 28. ONAGRACEÆ. Stam. 4. Style 1, filiform: Stigma capitate. Ovary 4-celled.]
 75. ARISTOLOCHIACEÆ. Stam. 6—12. Style short: Stigma rayed. Ovary 3- or 6-celled.

***** *Ovary inferior, its cells 1-seeded.*

[29. HALORAGACEÆ. Limb of pistillate, perianth minute. Stam. 1—8. Style or styles filiform, villous. Leaves verticillate. Aquatic plants.]

74. SANTALACEÆ. Limb of perianth conspicuous. Stam. 4—5. Style glabrous. Leaves alternate. Root woody.

B. *Barren flowers in catkins; or fruit surrounded by a hardened or prickly involucre. Ovules and seeds within a closed pericarp. Style or Stigma present.*

85. SALICACEÆ. Ovary superior, 1-celled, many-ovuled. Fruit 2-valved. Seeds numerous, comose. Woody plants.

86. CUPULIFERÆ. Ovary inferior, with 2 or more cells. Fruit indehiscent, 1—3-seeded. Trees or shrubs.

84. BETULACEÆ. Ovary superior, 2-celled. Ovules solitary, pendulous. Fruit indehiscent, dry. Trees or shrubs.

83. MYRICACEÆ. Ovary superior, 1-celled. Ovule 1, erect or ascending. Styles 2. Perianth 0. Fruit indehiscent, drupaceous. Shrubs.

82. ELEAGNACEÆ. Ovary superior, 1-celled. Ovule 1, ascending. Style 1. Perianth of pistillate flowers tubular, at length succulent. Fruit indehiscent. Shrubs.

[46. COMPOSITE (Genus 47.). Fruit indehiscent. Pistillate flowers surrounded by a prickly involucre. Plants herbaceous.]

C. *Barren flowers in catkins. Fruit in cones; or the seed surrounded by a fleshy involucre. Ovules and seeds not contained within a closed pericarp. Style and Stigma 0.*

87. CONIFERÆ. Scales of barr. catkins (monadelphous filaments) bearing the anther-cells on the under side, those of the cones (open ovaries) bearing the ovules on the upper surface.

I. *Flowers usually perfect, i. e. each with stamens and pistil.*
(ORD. LXIX.—LXXV.)

* *Ovary superior or nearly so.* (Ord. LXIX.—LXXIII.)

ORD. LXIX. AMARANTHACEÆ Juss.

Sometimes monœcious. *Perianth* 3—5-leaved, usually with small bracteas at the base. *Stamens* 3—5, hypogynous, sometimes monadelphous, opposite to the segments of the perianth. *Anthers* often 1-celled. *Ovary* 1, 1—2-celled, with 1 or several ovules. *Styles* 1 or 0. *Stigma* simple or compound. *Capsule* membranous, 1-celled. *Seeds* attached to a free central *placenta*, often stalked. *Embryo* curved round a farinaceous *albumen*.—Herbs, rarely shrubs. *Stems* not jointed. *Leaves* without stipules. *Closely allied in essential character to, but differing in habit from, the following Order.*—Many of the species are used as potherbs.

1. AMARÁNTHUS Linn. Amaranth.

Flowers polygamous-monœcious, tribracteate.—*Barren fl.* *Perianth* single, deeply 3—5-partite. *Stam.* 3—5, distinct: *anthers* 2-celled.—*Fertile fl.* *Perianth* single, deeply 3—5-partite. *Styles* 3 or 2. *Utricle* with 1 vertical *seed*, bursting all round transversely.—Named from *a*, *not*, *μαραινω*, to *fade*, or, flowers which do not fade; they are commonly called “Everlasting flowers.”

1. A. **Blitum* L. (*wild A.*); flowers 3-cleft and triandrous in small axillary clusters the segments very obtuse, leaves long-stalked obovate obtuse attenuate at the base, perianth as long as the bracteas and half the length of the utricle which is 2—3-toothed and wrinkled at the apex, stem erect or ascending angled and furrowed. *E. B. t.* 2212.

Low waste grounds and near dunghills, appearing occasionally about Cambridge, London, and in Huntingdonshire. ☉. 8.—An extremely misunderstood species, of which we have seen no British specimen: several other half-naturalized plants are probably often collected for it.

(*A. retroflexus* L. has been found near Hertford and Sawbridge-worth, but has no title to a place in the flora of this country: it is scarcely a European plant, but rather an American one.)

ORD. LXX. CHENOPODIACEÆ Juss.

Sometimes monœcious or polygamous. *Perianth* free generally deeply cleft and without bracteas at its base. *Stamens* mostly 5 (in *Salsola* 2 or 1). *Stamens* from the base of the perianth, and opposite to the segments: *anthers* 2-celled. *Ovary* 1, 1-celled, with a single *ovule*. *Style* divided, rarely simple. *Fruit* indehiscent (usually a *utricle*, sometimes a *caryopsis*, rarely *fleshy*). *Seed* 1 at the base of the cell. *Embryo* spiral and without *albumen*, or curved round a farinaceous *albumen*.—Herbs, rarely shrubs; without stipules. Flowers small, inelegant.—In this Order are many potherbs, some are tonic, and antispasmodic. The seeds of *Chenopodium* are employed in the preparation of shagreen; *C. Quinao* is a most extensively used article of food in Peru; *C. ambrosioides* and *C. Botrys* contain an essential oil; *C. anthelminticum* yields wormseed oil, a powerful vermifuge, as its name implies; and *C. olidum* exhales pure ammonia. *Atriplex hortensis* is the garden orache; *Spinachia*, the spinach; *Beta*, the beet. All yield carbonate of soda and hence *barilla*. From *beet-roots* is extracted the very fine sugar now extensively manufactured in France.

* *Stem jointed.* (*Embryo annular.*)

4. SALICORNIA. *Stam.* 1—2.

** *Stem continuous. Leaves semicylindrical or terete. (Embryo spiral.)*

5. *SUÆDA.* Segments of the perianth remaining unaltered.

6. *SALSOLA.* Segments of the perianth ultimately with a dorsal transverse wing.

*** *Stem continuous. Leaves flat. (Embryo annular.)*

† *Flowers all similar and mostly perfect.*

1. *BETA.* Lower half of the ovary and utricles adhering to the perianth.

2. *CHENOPODIUM.* Ovary and utricles free from the perianth.

†† *Flowers imperfect: all, or some of the pistillate ones, of a different form.*

3. *ATRIPLEX.*

SUB-ORD. 1. CYCLOLOBEÆ. *Embryo annular, curved round the (usually) copious albumen.*

Tribe I. CHENOPODEÆ. *Flowers uniform, mostly perfect. Stem continuous. (Gen. 1, 2.)*

1. *BÊTA* Linn. Beet.

Perianth single, 5-cleft, persistent. *Stam.* 5. *Utricle* reniform, imbedded in the fleshy base of the calyx.—Named from the Celtic *bwyd*, or *biadh*, food or nourishment; being used for that purpose.

1. *B. maritima* L. (common *B.*); stems erect or procumbent at the base angled branched, spikes longish narrow somewhat erect leafy paniced, flowers 1—4 together sessile, when in fruit 2—3 cohering, segments ultimately keeled and inflexed at the summit. *E. B.* t. 285. *B. vulgaris* L.

Sea-shores, especially in a muddy soil. England; and the south, principally, of Scotland. ♂ or ♀. 6—9.—*Root* large, thick, and fleshy. *Stem* tall. *Root-leaves* subovate, succulent, entire, waved, upper cauline ones nearly sessile, oblong. *Spikes of flowers* numerous, leafy; *leaves* small, at the base of each flower or pair of flowers, which are greenish. *Styles* usually 2.—Moquin-Tandon has at length satisfied himself that the *B. maritima* is the wild form of the cultivated beet, and also of the *mangel-wurzel*. Smith observes that, according to Linnæus, *B. maritima* differs from *B. vulgaris* in the keel of the calyx being entire. The present is esteemed a wholesome food when boiled. Mr. W. Wilson finds always 3 styles, the germen 3-sided, flowers often 3 together, and that when the seed is ripe the germen becomes purple and granulated.

2. *CHENOPODIUM* Linn. Goose-foot.

Flowers usually all perfect. *Perianth* nearly uniform, usually 5-(sometimes 2—4-) cleft, persistent and unaltered, or at length fleshy, closing upon the fruit. *Ovary* and fruit free from the perianth. *Seed* lenticular. (*Leaves* flat. *Bractæas* under each

flower none.)—Named from *χην*, *χηνος*, a goose and *πους*, a foot; from the shape of the leaves in some species. They are more or less employed as potherbs.

* *Seeds horizontally compressed.* *Chenopodium Moq.*

† *Leaves undivided.*

1. *C. olidum* Curt. (*stinking G.*); leaves ovato-rhomboid entire mealy, flowers in dense clustered leafless spikes, stem diffuse. *E. B.* t. 1034. *C. Vulvaria L.*

Waste places, and under walls, especially near the sea on the east side of both England and Scotland. ☉. 8, 9.—*Leaves* small, petiolate, greasy to the touch, and covered with a pulverulent substance, which, when bruised, yields a detestable odour, resembling that of putrid fish. *Seeds* very small, shining, slightly rough.

2. *C. polyspermum* L. (*many-seeded G.*); leaves ovate-elliptical sessile, spikes axillary elongated subcymose.—*α.* stems all prostrate, leaves obtuse, spikes cymose leafless. *C. polyspermum E. B.* t. 1480.—*β.* stem erect, leaves acute, spikes leafy scarcely cymose. *C. polyspermum Curt.* *C. acutifolium E.B.* t. 1481.

α. Cornwall.—*β.* not unfrequent in England, in waste places and among rubbish, and on ballast-hills. ☉. 8, 9.—The spikes of *flowers* are more or less cymose, sometimes leafy and leafless upon the same individual; so that we cannot assent to the opinion that the *C. acutifolium* is distinct from *C. polyspermum*, of which Wallroth, an excellent observer, says, "*variat foliis ovatis, obtusis, emarginatis, rubro-marginatis, acutis; cymis aphyllis et foliosis expansis.*" It is remarkable for its very numerous dark brown, shining, minutely dotted *seeds* (which are obtuse at the margins), in part only enveloped by the perianth.

†† *Leaves toothed, angled or lobed.*

3. *C. úrbicum* L. (*upright G.*); leaves triangular toothed or nearly entire, spikes long erect approaching the stem sub-simple nearly leafless, flowers scattered on the spikes, edge of the seeds obtuse.—*α.* leaves with short triangular teeth.—*β.* leaves with large acute teeth. *E. B.* t. 717. *C. intermedium Mert. et Koch.*

α. Near Oxford: *Sm.*—*β.* waste places, under walls, and about towns and villages. Scarcely indigenous in Scotland. ☉. 8, 9.—*Stem* erect, angular. *Leaves* large, truncate or subcuneate at the base, of a light or subglaucous green, their margins in *var. β.* deeply and irregularly toothed. *Flowers* in rather small, but remote clusters, on very long straight erect spikes. *Seeds* minutely rough, coated very tightly with the papillose, fragile *utricle*, large in comparison with those of the following species, "almost as big as rape-seed:" *Curtis.*

4. *C. murale* L. (*Nettle-leaved G.*); leaves shining ovate approaching to rhomboid acute sharply toothed entire at the base, spikes divaricately branched cymose leafless, seeds opaque minutely granular acutely keeled at the edge. *E. B.* t. 1722.

Waste places near towns and villages. Not found in Scotland. ☉. 8, 9.—Branches of the *spikes* spreading. *Flowers* rather distant. Smell unpleasant.

5. *C. hybridum* L. (*Maple-leaved G.*); leaves subcordate angulato-dentate acuminate, teeth large distant, spikes very much branched subcymose divaricate leafless, seeds opaque dotted, their edge obtuse and not keeled. *E. B.* t. 1919.

Waste places and in cultivated fields, not common; about London Colchester, Dedham, Ely, and Edinburgh. ☉. 8.—*Stems* slender. *Leaves* large, with very prominent teeth or angles. *Spikes* similar to the last, but the branches are more remote and spreading, and the margin of the seed is different.

6. *C. album* L. (*white G.*); leaves ovate inclining to rhomboid sinuate-toothed entire at the base, upper ones oblong perfectly entire, spikes branched somewhat leafy, seeds even or very minutely dotted shining blunt and keeled at the edge.—*α.* leaves mealy, axillary spikes dense. *E. B.* t. 1723.—*β.* leaves green more entire, spikes elongated more branched. *Sm. C. viride* L.

Waste places, dunghills, &c., common. ☉. 7—9.—*Leaves* usually covered with a whitish and mealy substance, varying in their width, and in the erosion, or blunt toothing, of the upper half of their margins. When they are green and nearly entire it is the *C. viride* L.

7. *C. ficifolium* Sm. (*Fig-leaved G.*); leaves long stalked deltoid-cuneate at the base toothed and sinuate at the margin thin, lower ones hastate 3-lobed lobes ascending, middle ones elongated, upper ones oblong, uppermost linear quite entire, seeds shining dotted their edge obtuse and not keeled. *E. B.* t. 1724.

Dunghills and waste ground, about London and Yarmouth. ☉. 8, 9.—Hudson and Moquin-Tandon refer this to the obscure *C. serotinum* L., which, however, Sir James Smith says is a Spanish plant, not yet found in Britain; but Linnæus himself considered the English plant to be the same. Mr. Bentham unites it to *C. album*, from which it must be confessed it differs only in characters of little importance.

** *Seeds vertically compressed.* Blitum Moq.

8. *C. glaucum* L. (*Oak-leaved G.*); leaves all oblong toothed and sinuate at the margin glaucous and mealy beneath, spikes

erect mealy simple leafless, stigmas short, seed minutely reticulato-rugose. *E. B.* t. 1454.

Waste ground, especially on a sandy soil about London; also in Dorset, Isle of Wight, Durham, Northumberland, and Glamorgan. ☉. 8.—*Seeds* minute. *Perianth* 4—5-partite in some (perhaps only the terminal) *flowers* with the seed horizontal, as in the *E. Bot.* figure, sometimes 2—3-partite, when the seed appears to us to be always vertical. "*Stam.* 1—3:" *Wilson*.

9. *C. rúbrum* L. (*red G.*); leaves triangular somewhat rhomboid toothed and serrate, spikes erect compound leafy, flowers crowded on the spikes, stigmas short, seeds smooth shining.—*α.* leaves usually rhomboid irregularly toothed, edge of the seeds obtuse and slightly keeled, stem erect. *E. B.* t. 1721.—*β.* *botryodes*; leaves triangular shortly attenuate at the base scarcely toothed, edge of the seeds acutely keeled, stems prostrate. *C. botryodes Sm.*: *E. B.* t. 2247.

α. Dunghills and under walls; also in salt-marshes. Rare (if indigenous) in Scotland.—*β.* waste ground near the sea; Yarmouth, Lowestoft, South Shoebury ☉. 8, 9.—*Stems* frequently reddish. *Leaves* always more or less attenuate at the base, by no means truncate. *Spikes* very compound, thick. The salt (or alkali) contained in the juice of this plant crystallises upon the surface of the stem. *Perianth* in 2—3 deep segments, with vertical *seeds*, in the lateral flowers; the terminal ones are usually 5-partite, with the seed horizontal; others are 4-partite. The seeds are small, smooth, enveloped in the loose thin *utricle*.

10. *C. Bonus-Henricus* L. (*Mercury G.*, or *good King Henry*); leaves hastate-triangular (mostly) entire, spikes compound terminal and axillary erect leafless, stigmas elongated, fruit longer than the perianth, seed dotted with the edge obtuse. *E. B.* t. 1033.

Waste places and way-sides, frequent. 4. 5—8.—*Stems* 1 ft. high, striate. *Leaves* large, dark green, used instead of spinage. *Perianth* quite campanulate, 5-cleft half-way down. *Seed* always vertical, coated with a true pellicle, besides the capsular integument, on removing which the seed is smooth and shining: *Wilson*.

Tribe II. ATRIPLICEÆ. *Flowers imperfect. Stem continuous.* (Gen. 3.)

3. A'TRIPLEX Linn. Orache.

Flowers monœcious or diœcious.—*Sterile fl.* *Perianth* 3—5-partite, without bracteas. *Stam.* 5. *Style* 0.—*Fertile fl.* sometimes of two kinds. 1. *Perianth* 5-partite, without bracteas. *Stam.* usually 0. *Style* bipartite. *Ovary* free from the perianth. *Seed* horizontally compressed. 2. *Perianth* single, of 2 valves (or 0,

with 2 bracteas, *Moq.*). *Stam.* 0. *Utricle* covered by the persistent enlarged *perianth*. *Seed* vertically compressed.—Named from *α*, *not*, and *τρέφειν*, to *nourish*. (The second kind of fertile flowers is always present; the first kind occurs in very few species.)

* *Fertile flowers, all very dissimilar to the sterile ones; their perianth of 2 valves, united to the apex, more or less toothed. Seed acute. Radicle superior. Obione.*

1. *A. portulacoides* L. (*shrubby O.*, or *Sea Purslane*); stem shrubby, leaves obovato-lanceolate entire silvery-white, perianth of the fruit very shortly stalked inversely triangular rounded below 3-toothed at the apex. *E. B. t.* 261. *Halimus Wallr.* *Obione Moq.*

Muddy sea-shores, England and Ireland. Mull of Galloway, and near Helensburgh, Scotland. *℥.* 8—10.—*Stem* 1—2 ft. or even more high, with small yellowish *flowers* in axillary *spikes*.

2. *A. pedunculata* L. (*stalked Sea O.*); stem herbaceous zigzag with spreading branches, leaves obovato-lanceolate upper ones narrower, perianth of the fruit cuneate on long stalks 3-lobed at the apex, the lateral lobes recurved larger than the middle ones. *E. B. t.* 232. *Halimus Wallr.* *Obione Moq.*

On the east and south coasts of England, in muddy salt-marshes; Kent, Suffolk, Norfolk, Lincoln, and Cambridgeshire. Connemara, Ireland. ☉. 8, 9 — Whole *plant* covered with scaly mealiness. This is well distinguished from all the other species by its long *peduncles* and the peculiar shape of the seed-bearing *perianth*, especially when the *fruit* is ripe.

** *Fertile flowers all very dissimilar to the sterile ones; their perianth of 2 valves nearly distinct, or united to the middle. Seed lenticular. Radicle inferior or lateral. Atriplex.*

† *Stem uniformly (buff-) coloured. Floral leaves subsessile. Fertile flowers axillary.*

3. *A. laciniata* Sm. (*frosted Sea O.*); stem herbaceous spreading procumbent, leaves triangular rhomboidal dentato-sinuate very nearly beneath, spike of sterile flowers dense leafless, fertile flowers axillary, perianth of the fruit rhomboidal 3-ribbed and often tubercled at the back, seeds finely granular. *E. B. t.* 165. *A. rosea* L.? *Moq.* *A. arenaria* Woods.

Sandy sea-shores not uncommon. ☉. 7—9.—Whole *plant* hoary. A distinct species, which we have no hesitation in considering to be that of Linnæus, not only on the authority of one authentic specimen in his herbarium, but because his "*flores fœminæ axillares geminæ*" clearly apply to this and not to *A. laciniata* of Moquin-Tandon, and of most continental botanists.

†† *Stems green, with resinous usually reddish stripes. Leaves all stalked. Fertile flowers mostly mixed with the sterile ones.*

‡ *Lower leaves with lateral, spreading or ascending lobes.*

4. *A. Babingtoni* Woods (*spreading-fruited O.*); stem herbaceous spreading procumbent or ascending with spreading branches, leaves mealy ovate triangular somewhat 3-lobed unequally sinuato-dentate, upper ones lanceolate dentate and often 3-lobed at the base, perianth of the fruit rhomboid acute toothed tubercled on the back united on both sides, spikes axillary and terminal few-flowered, seeds minutely tubercular-rugose. *A. rosea* Bab. in *E. B. S. t.* 2880. *A. crassifolia* Fries.

Sea-coast, common. ☉. 7—9.—Probably not the *A. rosea* of Linnæus, of which he himself does not appear to have seen specimens. Mr. Woods suspects it may be also the *A. crassifolia* Moq. from the Altaic mountains. It is a most variable plant, and we doubt if it be distinct from the next, with which Smith and most others united it; but we give Mr. Babington's character.

5. *A. patula* L. (*spreading Halberd-leaved O.*); stem herbaceous erect or spreading, lower leaves triangular-hastate with two horizontally spreading lobes irregularly toothed, the upper ones nearly entire, perianth of the fruit toothed or entire on the margin slightly tuberculate on the back, spikes nearly simple interrupted, seeds mostly dark brown and wrinkled. *E. B. t.* 936. *A. hastata* L. ? : Moq. *Chen. En.* (not of DC. Pr.) *A. calotheca* Ruffn. et Fries: Moq. in DC. *Prod.*

Cultivated and waste ground and in salt-marshes, common. ☉. 6—10.—*Branches* long, striate. *Flowers* in small clusters on long interrupted axillary spikes. *Perianth* of the fruit variable: in each spike there are usually two kinds; those below are larger with a dark brown wrinkled seed; those towards the extremity smaller, with a black shining perfectly smooth seed. The specimen in the Linnæan herbarium named *A. patula* appears to be this species, but the description may also include *A. angustifolia*.

6. *A. deltoidea* Bab. (*triangular-leaved O.*); stem herbaceous prostrate or erect with ascending branches, lower leaves hastate-triangular unequally toothed, perianth of the fruit entire or toothed usually muricate on the back, spikes nearly simple collected into a branched many-flowered panicle, seeds all shining smooth. *A. patula* Moq. *Chen. En.* *A. hastata* Moq. in DC. *Prod.*—*α.* stem erect with ascending branches, leaves all triangular-hastate toothed, perianth toothed muricate on the back. *E. B. S. t.* 2860.—*β.* stem erect or ascending with ascending branches, upper leaves subulate-hastate entire, perianth entire rough on the back. *A. microsperma* W. et K.—*γ.* stems and branches prostrate, upper leaves lanceolate entire, spikes only slightly branched. *A. prostrata* Bouch.

α. Cultivated and waste land in the south of England, not uncommon.—*β* near Bath. Belfast.—*γ*. sea-coast, rare. ☉. 6—10.—*Seeds* uniform, black and wrinkled, not half so large as the wrinkled chestnut ones of *A. patula*, although similar to the small seed of that species, of which it may be only a variety.

7. *A. angustifolia* Sm. (*spreading narrow-leaved O.*); stem herbaceous erect or prostrate, lower leaves with two ascending lobes from a wedge-shaped base, upper ones lanceolate entire, seeds smooth and shining. *A. patula* Moq. in *DC. Prod.* (not of *Chen. Eu.*)—*α*. lower leaves entire, perianth of the fruit rhomboidal with ascending lateral angles entire smooth on the back, spikes nearly simple interrupted. *E. B.* t. 1774.—*β*. lower leaves sinuato-toothed, perianth of the fruit rhomboidal denticulate usually tuberculate on the back, spikes branched dense many-flowered. *A. erecta* Huds.: *E. B.* t. 2223.

Cultivated and waste ground. ☉. 7—10.—Probably only a narrow-leaved var. of *A. deltoides*; indeed under that name, and as a single variable species, Mr. Bentham unites all of this and the following subsection.

‡‡ *None of the leaves lobed.*

8. *A. littoralis* L. (*Grass-leaved Sea O.*); stem herbaceous erect, leaves lanceolate entire or toothed, perianth of the fruit toothed muricate at the back.—*α*. leaves linear-lanceolate, perianth of the fruit ovate-rhomboid acute spreading at the point. *E. B.* t. 708.—*β*. leaves ovato-lanceolate, perianth of the fruit obcordato-triangular obtuse closed. *A. marina* L.

Muddy salt-marshes, chiefly on the east coast. ☉. 7—9 — The under side of the *leaves* and the *flowers* is mealy; the latter grow in rather crowded, axillary and terminal *spikes*. Mr. Woods mentions that he has met with horizontal seeds in this species, which he supposes were produced by flowers similar to the sterile ones; he also states that the var. *α*. alone is found at Lewes, while *β*. is plentiful on the banks of the Thames.

*** *Fertile flowers of two kinds.* Dichospermum.

9. *A. nitens* Rebert. (*shining-leaved O.*); stem herbaceous erect branched, leaves triangular acuminate shining above glaucous beneath, lower ones cordato-hastate, upper deltoid somewhat auricled, uppermost lanceolate, perianth of the fruit ovato-acuminate entire smooth on the back thin and finely reticulate.

Sea-shore near Ryde, Isle of Wight: *Dr. Bromfield*. ☉. 8, 9.—A large coarse species, probably introduced: it is common in the east of Germany, but grows as far west as Hamburgh: *Woods*.

[*A. hortensis* L., a too closely allied species, and to which Mr. Bentham reduces *A. nitens*, has been found at Saffron Walden and in some other places, but cannot be said to be naturalized.]

Tribe III. SALICORNEÆ. *Flowers uniform, perfect. Stem jointed.* (Gen. 4.)

4. SALICORNIA Linn. Glasswort.

Perianth turbinate, fleshy, obscurely lobed, imbedded in an excavation of the *rachis*. *Stam.* 1—2. *Style* short. *Stigmas* bi-trifid. *Fruit* a *utricle*, included in the enlarged *perianth*.—Named from *sal*, *salt*, and *cornu*, a *horn*; from the horn-like branches and saline nature of the plants.

1. *S. herbacea* L. (*jointed G.*); stem herbaceous, articulations compressed somewhat thickened upwards and notched, spikes cylindrical slightly tapering at the extremity, seeds oval or oblong covered with hooked hairs.—*α.* stem erect. *S. herbacea Sm. E. Fl* v. i. p. 2. *S. annua E. B. t.* 415.—*β.* stem procumbent. *S. procumbens E. B. t.* 2475.

Salt-marshes, plentiful. ☉. 8, 9.—*Plant* leafless, much branched and jointed; articulations a little thickened upwards, very succulent, shrinking much when dry, in which state the upper extremity of each articulation forms a two-lobed membranous socket or short sheath, which receives the base of the articulation above it. *Spikes of flowers* dense, lateral and terminal, jointed like the stem, and bearing, at the base of every short articulation, on two opposite sides, a cluster of 3 *flowers*, each composed of a single *perianth*, apparently quite closed at the top, and pierced, as it were, by the bi- or tri-fid *stigma* and the single or two *stamens*,—when two, they appear in succession. *Perianth of the fruit* with a narrow circular wing near the summit. *Pericarp* thin and adhering to the *seed*, the integument of which is simple. Mr. Wilson observes that the central flower (in the *erect* var. at least) has two *stamens*, one placed below, the other above, the laterally compressed germen; and that the side-flowers have only *one*, placed above the germen.

2. *S. radicans* Sm. (*creeping G.*); stem woody procumbent and rooting, articulations compressed spreading and notched at the top scarcely thickened, spikes oblong obtuse, seeds nearly globose with hooked hairs. *E. B. t.* 1691. *S. fruticosa Sm.: E. B. t.* 2467.

Muddy sea-shores, rare; on the Norfolk and Sussex coasts. In the Isle of Sheppey, Kent. Near Newry, Ireland. 4. 8, 9.—This plant requires more investigation in a recent state. Smith originally referred our form of it to the *S. fruticosa* Linn., and Moquin-Tandon makes it the *var. β.* of that species, which, however, seems to have tubercled, and not hairy seeds. Upon these plants Mr. Joseph Woods has some valuable observations in the "Proceedings of the Linn. Society," vol. iii. p. 814, although we see no reason to admit more than two British species; even these two Mr. Bentham unites.—The various species of this genus, as well as others belonging to the same natural family, and growing abundantly on the coasts in the

south of Europe and north of Africa, yield a vast quantity of soda, much employed in making both soap and glass, whence comes their English name, *glasswort*.

SUB-ORD. II. SPIROLOBEÆ. *Embryo spiral; albumen none or in small quantity.*

Tribe IV. SUÆDEÆ. *Seed with a double integument. Embryo in a flat spiral. Stem continuous. (Gen. 5.)*

5. SUÆ'DA Forsk. Sea-Blite.

Flowers usually perfect, bibracteate at the base. *Perianth* 5-partite, at length inflated and often fleshy (without appendages or a wing at the back). *Stam.* 5. *Style* 0. *Stigmas* usually 3. *Utricle* covered by the perianth. *Seed* lenticular; integument double, outer one crustaceous. *Leaves* semicylindrical.—Name: *suaed* is the Arabic appellation of one of the species, all of which yield *soda*.

1. *S. fruticosa* Forsk. (*shrubby S.*); leaves obtuse, styles 3 often combined at the base, seeds even shining vertical, stem erect shrubby. *Salsola* L.: *E. B.* t. 635. *Chenopodium* Schrad. *Schoberia* Mey.

On the Norfolk coast, especially at Cley; and coasts of Suffol'k, Dorset, Hants, Devon, and Cornwall, but rare. *h.* 7—10.—*Stem* 3 ft. high or more, with many erect, leafy branches. *Flowers* in small axillary clusters, sometimes solitary. *Perianth* unchanged in fruit, as in the following species.

2. *S. maritima* Dumort. (*annual S.*); leaves usually acute, styles 2, seeds reticulato-striate horizontal, stem herbaceous diffuse. *Chenopodium* L.: *E. B.* t. 633. *Chenopodina* Moq. *Schoberia* Mey.

Sea-shore, frequent. ☉. 7—9.—A much smaller plant than the last, and annual. *Flowers* solitary, or two in the axils of the leaves, and each subtended by two small, ovate, acute, narrow bracteas. Moquin-Tandon separates his new genus *Chenopodina* from *Suæda* almost solely on account of the seeds being horizontal, not vertical.

Tribe V. SODEÆ. *Seed with a simple integument. Embryo in a conical spiral. Stems continuous or jointed. (Gen. 6.)*

6. SÁLSOLA Linn. Saltwort.

Flowers perfect, bracteate at the base. *Perianth* inferior, 5-partite, persistent, enveloping the *utricle* with its base, and crowning it with its *limb* which has a broad scarioso dorsal

wing. *Stam.* 5. *Styles* 2. *Seeds* horizontal; integument simple, membranous. — Named from *sal*, *salt*. From many of this tribe alkaline salt is abundantly obtained, as implied by the name of our only British species.

1. *S. Káli* L. (*prickly S.*); stems herbaceous prostrate, leaves subulate spinous scabrous, flowers axillary solitary, segments of the enlarged perianth cartilaginous as long as their spreading roundish wings. *E. B. t.* 634.

Sandy sea-shores, frequent. ☉. 7. — *Stem* angled, very much branched. *Flowers* pale-greenish, sessile, with 3 leaf-like bractes at the base of each.

ORD. LXXI. SCLERANTHACEÆ Link.

Perianth of 1 piece, tubular; *limb* 4—5-cleft. *Stamens* 1—10, perigynous, inserted into the mouth of the tube. *Ovary* superior, simple, 1-celled. *Styles* 2, or 1 emarginate at the apex. *Ovules* solitary, or rarely 2, suspended from the apex of a free filiform column or cord that arises from the bottom of the cell. *Fruit* a *utricle*, inclosed within the hardened tube of the perianth. *Seed* solitary. *Embryo* cylindrical, curved round the farinaceous *albumen*. — *Small inconspicuous* herbs. *Leaves* *opposite*, without stipules. *Flowers* *minute*.

1. SCLERÁNTHUS Linn. Knawel.

Perianth 5-cleft. *Stam.* 10; 5 or more frequently abortive or wanting. *Styles* 2. — Named from σκληρός, hard, and ανθος, a flower; from the indurated nature of the floral covering.

1. *S. ánnuus* L. (*annual K.*); calyx of the fruit with erect or erect patent rather acute segments edged with a narrow white membrane, stems spreading, root annual. *E. B. t.* 351.

Corn-fields, frequent. ☉ or rarely ♂. 7, 8. — *Stems* many, much branched in a dichotomous manner, slender, green, subpubescent, straggling. *Leaves* linear-subulate, keeled, opposite and combined at the base by a membranous fringed margin. *Flowers* green, inconspicuous, in axillary leafy clusters. *Perianth* urceolate, ribbed, with 5 ovato-lanceolate teeth, spreading when in flower, almost erect in fruit. We have seen foreign specimens (from Hamburgh) precisely intermediate between this and the next.

2. *S. perénnis* L. (*perennial K.*); calyx of the fruit with obtuse close segments edged with a broad white membrane, stems procumbent, root perennial. *E. B. t.* 352.

Open dry sandy fields, in Norfolk and Suffolk. 4. 6—8. — *Stems* simple or irregularly branched, glaucous. The broad white membrane gives the *flowers* a variegated appearance.

ORD. LXXII. POLYGONACEÆ *Juss.*

Sometimes monœcious or diœcious. *Perianth* free, divided, the segments often in a double row. *Stamens* definite, but varying in number, inserted into the base of the perianth. *Ovary* superior, with 2 or more *styles* or sessile *stigmas*. *Achene* frequently triangular or lenticular, with one erect *seed*. *Embryo* in a farinaceous *albumen*, often lateral.—Herbaceous, *rarely* shrubby plants, with *sheathing* stipules!—The stems and leaves are acid and astringent; the roots, in general, nauseous and purgative; while the seeds are very farinaceous and esculent. The *true rhubarb* belongs to this Order: it is a species of *Rheum* not clearly ascertained.

1. POLYGONUM. Perianth 5-partite. Styles 2—3. Achene wingless compressed or triquetrous.
2. RUMEX. Perianth 6-partite; the three inner segments at length larger, connivent and covering the triquetrous wingless achene. Styles 3.
3. OXYRIA. Perianth 4-partite: the two inner segments larger. Styles 2. Achene compressed, with a membranous wing, at length larger than the perianth.

1. POLY'GONUM *Linn.* Persicaria, Bistort, Knot-grass, and Buck-wheat.

Perianth single, in 5 deep, coloured, persistent segments. *Stam.* 5—8. *Styles* 2—3. *Achene* compressed or trigonous.—Named from πολυς, *many*, and γονυ, a *knee* or *joint*; from the numerous joints of the stem.

* *Styles* 3, and the fruit triquetrous. *Stem* simple, with one terminal spiked raceme. *Stipules* truncate. *Root* thick and short. Bistort.

1. *P. Bistorta* L. (common B., or Snakeweed); raceme dense cylindrical, leaves subcordate-ovate waved, the radical ones with a winged foot-stalk. *E. B.* t. 509.

Moist meadows in various parts of England, Scotland, and Ireland.

4. 6—9.—*Stem* 1—1½ foot high. Upper leaves with long sheaths. *Flowers* flesh-coloured, on short foot-stalks, with small bractæas at their base. *Stam.* 8. *Styles* 3. *Root* large, tortuose, very astringent.

2. *P. viviparum* L. (viviparous alpine B.); spike linear lax bulbiferous at the base, leaves linear-lanceolate the lower ones elliptical petiolate their margins revolute, foot-stalks not winged. *E. B.* t. 669.

Mountain pastures in the north of England, and abundant on the Highland mountains of Scotland. 4. 6, 7.—*Stem* 4—8 inches high, slender. *Spike* linear; lower part of it generally bearing little viviparous bulbs of a fine red colour. *Stam.* 8. *Styles* 3. *Perianth* pale flesh-coloured, almost white.—This species increases much by

the bulbs, and little, if at all, by seed, its triquetrous germen proving usually abortive.

** *Styles 3. Achene triquetrous. Stem branched. Flowers axillary. Stipules 2-lobed, at length torn. Root fibrous. Knot-grass.*

3. *P. aviculäre* L. (*common K.*); leaves elliptic-lanceolate, stipules much shorter than the internodes with few distant simple nerves, stem herbaceous, achene about as long as and covered by the perianth. — *α. vulgare*; achene striate with raised points, the sides ovate. *E. B. t. 1252.* — *β. littorale*; achene obsoletely striate minutely punctate, the sides ovate-oblong. *P. littorale Link. P. crassinerve Ces.*

Waste places and way-sides, abundant. — *β.* sandy sea-shores. ☉. 5—9. — A most variable species.

4. *P. Raïi* Bab. (*Ray's K.*); leaves distant elliptic-lanceolate flat, stipules much shorter than the internodes with very few distant simple nerves, stem procumbent herbaceous, achenes longer than the perianth protruded quite smooth and shining. *E. B. S. t. 2805.* *P. maritimum Ray Syn. p. 147. P. Roberti Loisel. (in part).*

Sandy sea-shores in the west of England, Wales, and Scotland, and about Dublin. ☉. 7—9. — A large straggling species, appearing, as Mr. Babington well observes, exactly intermediate between *P. aviculäre* and *P. maritimum*. According to Dr. Meisner, who has examined authentic specimens from Loiseleur, *P. Roberti Loisel.* is a mixed species, composed partly of *P. aviculäre*, partly of *P. littorale Link.* and partly of *P. Raïi*, “ideoque omnino delenda.”

5. *P. maritimum* L. (*Sea-side K.*); flowers axillary, leaves crowded elliptic-lanceolate fleshy glaucous revolute at the margin, stipules about as long as the internodes with numerous branched nerves, stem procumbent woody below, achene longer than the perianth protruded quite smooth and shining. *E. B. S. t. 2804.*

Christ-Church Head on the sandy shore towards Muddiford, Hants. Channel Islands. Caroline Park, near Edinburgh (only one plant found): *Rev. Walter Little.* Killiney Bay, near Dublin. 4. 8, 9.

*** *Styles 3. Achene triquetrous. Flowers panicked or racemose. Stipules oblique at the summit. Root fibrous. Buck-wheat.*

† *Stem erect, with cymose panicles.*

6. *P. *Fagopyrum* L. (*common B.*): leaves cordato-sagittate, stem nearly upright without prickles, angles of the achene entire wingless. *E. B. t. 10+4. Fagopyrum esculentum Mæuch.*

Dunghills and about cultivated land. ☉. 7, 8. — *Stem nearly*

erect, flexuose, 1 foot high, branched. *Flowers* in spreading panicles, terminal and lateral, pale-reddish. *Stamens* 8. *Cotyledons* large, foliaceous, contorted and plaited. An excellent food for poultry.

†† *Stems twining. Flowers racemose.*

7. *P. Convólulus* L. (*climbing B.*); leaves cordate-sagittate, stem twining angular, segments of the perianth bluntly keeled (rarely winged), achene opaque striate with minute points. *E. B. t.* 941.

Corn-fields, frequent. ☉. 7—9. — Very long, climbing. *Spikes* lateral and leafy, of 4 whorled greenish *flowers*. The specimens with a winged perianth are of rare occurrence, and chiefly met with in the Isle of Wight.

8. *P. dumetórum* L. (*Copse B.*); leaves cordato-sagittate, stem twining striate, segments of the perianth with a membranous wing, achene quite smooth and shining on the surface. *E. B. S. t.* 2811.

Thickets in the south of England, but seldom found above a year or two in the same place. ☉. 8, 9. — Too closely allied to the winged variety of the last species.

**** *Styles mostly 2. Achene compressed or triquetrous. Stem usually branched. Stipules truncate. Persicaria.*

† *Creeping, perennial.*

9. *P. amphibium* L. (*amphibious B.*); creeping, stamens 6, styles 2, spike dense oblong-ovate, achene smooth shining, leaves petiolate, stipules membranous narrow. *E. B. t.* 436. — *α. aquaticum*; leaves floating broadly lanceolate glabrous, spikes oblong. — *β. terrestre*; nearly erect, leaves narrow-lanceolate rough with short rigid adpressed hairs on both sides, spikes ovate.

Margins of ponds, lakes, and ditches, and damp ground, frequent. Ȳ. 7, 8. — *Stem* 2—3 feet long, and scarcely branched when growing in the water. *Leaves* arising from long tubular *sheaths*, glabrous in *α.* but hispid in *β.* *Spikes* mostly solitary, terminal, of a bright rose-colour. The only perennial species of the *Persicaria* group.

†† *Root annual, fibrous.*

10. *P. Persicária* L. (*spotted P.*); stamens usually 6 (or rarely 8), styles 2—3 connected to the middle, spikes compact ovate-oblong cylindrical erect, peduncles and perianths nearly smooth, achene compressed and gibbous on one side or triquetrous, leaves lanceolate (often spotted), stipules lax strongly fringed. *E. B. t.* 756.

Moist ground and waste places, frequent. ☉. 7—10. — *Stems* erect, branched, 1—2 feet high. *Spikes* terminal and lateral, dense,

greenish, the tips of the *flowers* rose coloured. *Achene* either triquetrous or with a tendency to be so, as shown by the gibbous side. *Leaves* nearly sessile, usually glabrous, but there is a variety with hoary leaves.

11. *P. nodosum* Pers. (*slender-headed P.*); stamens 6, styles 2 connected at the base, spikes usually elongate and slender erect, peduncles and perianths glandular and scabrous, achene compressed smooth and shining concave on both sides, stem ascending with swollen nodes, leaves lanceolate slightly waved tapering at both ends glandular beneath, stipules lax shortly fringed, floral ones with a subulate point on one side. *P. laxum* Reich.: *E. B. S.* t. 2822. *P. incanum* Willd.

Woodford, Essex; Cambridge; Chalk Farm, London; Sussex. Jersey. ☉. 7, 8.—Reichenbach seems disposed to consider this a hybrid; Mertens and Koch confused it with *P. lapathifolium*; and Mr. Babington, in *Fl. Sarn.*, says "he suspects it will be found to be a var. of *P. Persicaria*." This last is, no doubt, the most correct view of its affinity; Dr. Meisner, however, distinguishes it by the stem taller (sometimes 2—6 feet high), usually red, and very thick nodes.

12. *P. lapathifolium* L. (*pale-flowered P.*); stamens 6, styles 2 nearly distinct, spikes oblong cylindrical dense erect, peduncles and perianth glandular and scabrous, achenes compressed smooth and shining concave on both sides, leaves ovato-lanceolate shortly petiolate, lower stipules not fringed, upper ones shortly fringed. *E. B.* t. 1382.

Fields and dunghills, frequent. ☉. 7, 8.—Stem 1—1½ ft. high. A very variable species; but the above characters are tolerably constant. Sometimes the stem is spotted, and sometimes the leaf is hoary. The *flowers* are either pale green, almost white, or of a reddish tint. *Spikes* dense, terminal, and lateral.

13. *P. mite* Schrank (*lax-flowered P.*); stamens 5, styles 2 (rarely 3) combined to the middle, spikes erect usually filiform lax, peduncles smooth, perianth without glands, achene lenticular compressed gibbous on one side obscurely and irregularly wrinkled shining, leaves lanceolate slightly waved, stipules hairy strongly ciliate without glands. *E. B. S.* t. 2867.

About London, Cambridge, and York. ☉. 8.—Allied to *P. minus*, differing from it in the greater size, broader leaves, and larger flowers and fruit, and from *P. Persicaria* by the lax spikes and slightly wrinkled achenes. *Flowers* red. "*Stamens* 6—8, never 5. *Styles* 2—3, nearly distinct," Meisn. This is not as we find them in this country, so that it is probable they vary too much to be relied on for characters.

14. *P. minus* Huds. (*small creeping P.*); stamens usually 6, styles 2-3 combined to above the middle, spikes slender lax erect,

peduncles smooth, perianth without glands, achene lenticular-compressed or triangular, smooth and shining, leaves linear-lanceolate plane very shortly petiolate, stipules ciliate without glands. *E. B. t.* 1043.

On gravelly, watery commons; about London, and in Worcestershire, Cheshire, and Lancashire. Very rare in Scotland. Near Cork, Ireland. ☉. 8, 9.—Allied to *P. Hydropiper*, but much smaller, usually procumbent and rooting at the base, with upright *spikes*, narrower *leaves*, and *styles* more combined. According to Dr. Meisner, however, the *styles* in his specimens are only united at the base, and there are 5 (rarely 8) *stamens*; if he be correct, there is scarcely any character left to separate this and *P. mite*. Mr. Benthham unites them.

15. *P. Hydrópiper* L. (*biting P.*); *stamens* usually 6, *styles* 2 combined to near the middle, *spikes* lax filiform at first drooping, peduncles smooth, perianth glandular, achene lenticular-compressed dotted opaque, leaves lanceolate waved, stipules mostly with scattered glands shortly fringed. *E. B. t.* 989.

Frequent by the sides of lakes and ditches. ☉. 8, 9.—*Stem* 1—3 feet high, erect. Remarkable for its slender, long, more or less drooping *spikes* of distant, reddish *flowers*; they are lateral and terminal, and are sometimes at length erect. "*Stamens* 6, rarely 8. *Styles* 2, rarely 3, combined to the middle." *Meisn.*

2. RÚMEX Linn. Dock. Sorrel.

Perianth 6-partite: the 3 inner *segments* (of the fruit) large, connivent. *Stam.* 6. *Styles* 3: *stigmas* multifid. *Achene* triquetrous covered by the enlarged inner sepals, which often bear tubercles.—Name of unknown origin.

* *Plants not acid. Flowers perfect, or monœcious. Lapathum. Dock.*

1. *R. Hydrolápathum* Huds. (*great Water D.*); enlarged sepals ovate-deltoid reticulate entire each with a tubercle, leaves lanceolate the lower ones cordate at the base, petiole flat not margined above, whorls crowded mostly leafless. *R. aquaticus Sm.: E. B. t.* 2104.

Ditches and river-sides, frequent in England, rare in Scotland. 4. 7, 8.—The largest of our *docks*, 3—5 feet high; some of the lower *leaves* 1½ ft. long. *Root* large, very astringent. Enlarged *sepals* with prominent veins, and large oblong tubercles.

2. *R. crispus* L. (*curled D.*); enlarged sepals broadly cordate entire or crenulate reticulate, one principally with a perfect large tubercle, leaves lanceolate waved acute, upper whorls leafless. *E. B. t.* 1998.

Way-sides and near houses, pastures, &c., frequent. 4. 6—8.—*Stem* 2 or 3 feet high. *Lower leaves* the broadest, all waved and crisped at the margins. *Whorls of flowers* very numerous and crowded.

Here the enlarged *sepals* are truly cordate. There seem to be two forms of this plant, one on the sea-shore, conspicuous by its large pale tubercles; the other and more usual kind having them orange-coloured.

3. *R. pratensis* Mert. et Koch (*Meadow D.*); enlarged sepals unequal cordate dilated toothed at the base with a small entire triangular point, one principally with a tubercle, leaves oblong-lanceolate wavy, whorls distinct nearly leafless. *Borr.* in *E. B. S.* t. 2757.

Marshes, in several counties of England. Berwick-upon-Tweed; Killin; Glen Farg. 2. 6, 7. — Allied to *R. crispus*, but the whorls are less crowded, the enlarged sepals are unequal in size and more distinctly toothed, and the leaves are broader and less curled; also allied to *R. obtusifolius*, but is distinguished by the triangular, not lingulate, entire portion of the enlarged sepals. Mr. Babington mentions that the enlarged sepals are sometimes all equally tubercled. All the specimens we have seen from this country appear to be hybrids between the last and the next species. Koch suspects that his plant is in the same predicament, and according to Wallroth it never bears perfect fruit.

4. *R. obtusifolius* L. (*broad-leaved D.*); enlarged sepals ovate or oblong-triangular obtuse toothed at the base, one principally bearing a tubercle, root-leaves ovate-cordate obtuse, upper ones oblong or lanceolate, stem roughish. *E. B.* t. 1999.

Way-sides and waste places, too frequent. 2. 7—9. — *Stem* 2—3 feet high. *Whorls* rather distant, lower ones somewhat leafy. Distinguishable by its broad and obtuse radical *leaves*, which are generally crisped at the margins. The entire terminal part of the enlarged sepals is, as Mr. Borrer observes, mostly oblong or almost lingulate. *Stem* scabrous between the elevated lines or ridges.

5. *R. aquaticus* L. (*grainless Water D.*); enlarged sepals broadly cordate entire or wavy membranous reticulate without tubercles, leaves lanceolate, the lower ones cordate-oblong crisped and wavy, whorls crowded mostly leafless. *Hook.* in *E. B. S.* t. 2698. *R. Hippolapathum* *Fries.*

Moist places. North of England and Scotland, not uncommon. 2. 7, 8. — Our plant comes very near *R. crispus*, but the enlarged sepals are quite destitute of grains or *tubercles*. Between this and the last there is a hybrid not uncommon in Kinross-shire, particularly in the parish of Orwell, which sometimes bears a few perfect seeds; the enlarged sepals are membranous, reticulate, broadly cordate, toothed, with sometimes a short blunt entire ovate point, one principally bearing a tubercle; it does not accord precisely with any of the species or hybrids noticed by Dr. Meisner in *De Candolle's Prodromus*, vol. xiv.

6. *R. *alpinus* L. (*alpine D.*, or *Monk's Rhubarb*); enlarged sepals cordate-ovate membranous reticulate obscurely toothed

at the margin, one usually bearing a small tubercle, leaves roundish-cordate ample obtuse, whorls leafless crowded, flowers monœcious. *E. B. S. t.* 2694.

Road-side from Helensburgh to the head of the Gare Loch, and in 2 or 3 stations in that neighbourhood; Glen Luss; near Dollar; Glen Farg, Perthshire. One-ash, Derbyshire. 4. 7.—Its root was formerly employed in place of *rhubarb*, and much cultivated by the monks and hermits, near whose former abodes it is principally met with. Leaves a span broad, cordate, very obtuse, wrinkled, and reticulate; upper ones ovato-lanceolate, whorls of flowers very dense. Dr. Meisner refers the figure in *E. B.* to *R. longifolius* DC., but that must surely have been by mistake, as the radical leaves of the two species are quite dissimilar. *R. longifolius* has the leaves of *R. aquaticus*, but the sepals of *R. alpinus*, and is *R. domesticus* Hartm.

7. *R. sanguineus* L. (*bloody-veined*, and (β .) *green-veined D.*); enlarged sepals narrow-oblong obtuse entire, one at least bearing a tubercle, leaves ovato-lanceolate, lower ones somewhat cordate, whorls distant on long generally leafless branches.— α . leaves with bright red veins. *E. B. t.* 1533.— β . leaves with green veins. *R. viridis Sibth.* *R. Nemolapathum Ehrh.*

Shady pastures, woods, and road-sides.— α . rare.— β . more frequent. 4. 7.

8. *R. conglomeratus* Murr. (*sharp D.*); enlarged sepals linear-oblong obtuse entire or obscurely toothed all bearing a tubercle, leaves oblong pointed, lower ones cordate or rounded at the base, whorls distant leafy. *R. acutus Sm.: E. B. t.* 724.

Watery places, not uncommon. 4. 6—8.—Much resembling *var. β .* of the last species, and appearing to differ chiefly in its more leafy whorls and enlarged sepals all constantly tubercled. Smith considers this to be the *R. acutus* L.; but it can scarcely be the species known under that name on the continent, which has ovate rather acute enlarged sepals, each with a very large red tubercle. It is the *R. Nemolapathum* of Campdera and some other continental botanists.

9. *R. púlcher* L. (*Fiddle D.*); enlarged sepals triangular-ovate reticulate with prominent veins deeply toothed, one of them principally bearing a tubercle, lower leaves panduriform or cordate oblong obtuse, upper ones lanceolate acute, stem spreading. *E. B. t.* 1576.

Pastures, way-sides, &c. 4. 6—8.—Stems procumbent; branches very straggling; whorls distant, on slender leafy branches.

10. *R. marítimus* L. (*golden D.*); enlarged sepals narrow deltoid acute, each fringed with 2—4 setaceous teeth as long as the sepal and bearing a narrow oblong tubercle, whorls much crowded many-flowered leafy, leaves linear lanceolate all attenuate at both ends. *E. B. t.* 725. *R. aureus With.*

Marshes, principally near the sea. 4. 7, 8.—Well distinguished

from every preceding species by its narrow *leaves*, excessively crowded *flowers*, bright, almost orange-coloured, enlarged *sepals*, and their setaceous, almost spinous *teeth*.

11. *R. palustris* Sm. (*yellow Marsh D.*); enlarged sepals ovate-oblong with a lanceolate entire point, each with 2—3 short setaceous teeth near the base shorter than the sepal and bearing a narrow oblong tubercle, whorls remote.—*α*. radical leaves oblong or lanceolate cordate or slightly decurrent at the base, upper ones linear-lanceolate. *R. Steinii* Becker.—*β*. all the leaves linear-lanceolate attenuate at both ends. *R. palustris* Campd.: *E. B. t.* 1932. *R. limosus* Thuill. *R. maritimus* Curt. Gold Dock *Petiv.*

Marshy places, remote from the sea; near the Vault, east of Dunbar: *J. Muckay*. 4. 7—9.—Nearly allied to the last, but distinguished by the distant whorls when in fruit; by the form of the enlarged sepals; and by the number, shape, length, and situation of the *teeth* which border them. Our var. *β*. is the form usually believed on the continent to be *R. palustris* of Smith; and Dr. Meisner, who examined the specimens in Smith's herbarium, came to the same conclusion; but Smith's description of the radical leaves certainly accords better (as shown by Mr. Babington) with our var. *α*. It is, however, probable that Smith, knowing of how little value the forms of leaves are for the distinction of species, when unsupported by other characters of greater importance, did not intend to separate the two even as varieties. No locality is now known with certainty for our var. *β*., although formerly it appears to have been found in ditches (now long since covered by houses) about London, and apparently also in Lincolnshire and Derbyshire. Mr. Babington, relying more on the form of the leaves than on the other points of distinction, was at one time inclined to refer the var. *β*. to *R. maritimus*; Dr. Meisner retains the three as distinct species; Mr. Bentham conjoins the whole.

** *Plants acid. Flowers dioecious. Acetosa, or Sorrels.*

12. *R. Acetosa* L. (*common S.*); outer sepals reflexed, enlarged ones orbicular-cordate entire membranous reticulate with a minute spherical tubercle at the base, leaves oblong-sagittate. *E. B. t.* 127.?

Meadows and pastures, frequent. 4. 5—7.—*Stem* 1—2 feet high. *Petals* becoming large, purplish, orbicular-cordate, obtuse, membranous, reticulate with veins; *tubercles* very small, almost obsolete. Sir J. E. Smith says the enlarged sepals are ovate, "each bearing a pale oblong tubercle:" it is therefore probable that he has described a cultivated specimen; this Mr. Babington refers to *R. Hispanicus* Koch (the *Acetosa Hispanica maxima* of Munting), which has oblong tubercles extending beyond the middle of the enlarged sepals; but that is a very little known plant, and apparently not cultivated in this country; neither Meisner nor Campdera had seen it. The synonym of Munting had been doubtfully referred by

Campdera to his *R. oxyotus*; but this, which has also ovate sepals, is reduced by Meisner to *R. Acetosa*.

13. *R. Acetosella* L. (*Sheep's S.*); sepals ascending, inner ones scarcely enlarged ovate without tubercles, lower leaves lanceolato-hastate lobes entire. *E. B.* t. 1674.

Dry pastures, frequent. \mathcal{U} . 5—7. — Variable in its height, from 2—10 inches, and in the form of its *leaves*; for, frequently, *only* the *radical* ones are of the shape above described, at other times many of the *cauline* ones are so too; the rest are lanceolate, more or less petiolate, entire. Every part is much smaller than in the last species. In very dry situations, and at the end of summer, the whole plant becomes of a rich red colour.

[*R. scutátus* L., the French or Garden Sorrel, has been observed near Edinburgh, Hamilton, and several other places, having escaped from cultivation. This has polygamous-monœcious flowers.]

3. OXÝRIA Hill: *R. Brown.* Mountain-Sorrel.

Perianth 4-partite, the two interior segments in front scarcely longer than the others, spreading. *Stamens* 6. *Styles* 2; *stigmas* multifid. *Achene* compressed, surrounded with a membranous wing, much larger than the sepals. — Named from *οξύς*, sharp or acid; in allusion to the acid flavour.

1. *O. renifórmis* Hook. (*Kidney-shaped M.*) *O. acida* Br. *Rumex digynus* L.: *E. B.* t. 910.

North of England, Wales, and Scotland, abundant in alpine situations, especially amongst moist rocks and within reach of the spray of cascades. \mathcal{U} . 7, 8. — *Stems* 8—10 inches high, with rarely more than one leaf, often naked. *Radical leaves* numerous, all reniform, with a more or less evident obtuse sinus at the apex, on long foot-stalks, having membranous *stipules* at their base. *Racemes* and *peduncles* branched, with minute, ovate, membranous *bracteas* at the base of each ramification. *Pedirels* thickened upwards. *Flowers* erect, small. *Stam.* 6, shorter than the petals. *Achene* with a remarkably broad winged border, tipped with the *styles* situated in rather a deep notch, and having at the base the sepals, none of which are enlarged as in *Rumex*. The leaves yield a most agreeably acid flavour, much resembling that of wood sorrel (*Oxalis Acetosella*).

ORD. LXXIII. THYMELACEÆ Juss.

Perianth free, tubular, often coloured, 4—5-cleft. *Stamens* inserted upon the tube, definite, when equalling in number the segments of the perianth opposite to them. *Anthers* 2-celled, opening longitudinally. *Ovary* 1, free, 1-celled, with one pendulous ovule. *Style* 1, and *stigma* 1, undivided. *Fruit* an achene, berry, or drupe. *Seed* 1, pendulous. *Albumen* none, or thin and fleshy. *Radicle* superior. — Shrubby, without stipules.

—An Order remarkable for the tenacious character of the inner bark, which is frequently made into paper, especially in India. *Lace-bark* is the same substance of *Lagetta lintearia*, and is composed of layers of beautifully reticulating fibres. The bark of all is caustic, acting upon the skin as a vesicatory, and causing excessive pain if chewed.

1. *DÁPHNE* Linn. Mezereon. Spurge-Laurel.

Perianth single, often coloured, 4-fid. *Stam.* 8. *Fruit* a berry.—Named in allusion to the nymph *Daphne*, who was changed into a *laurel*; some of the plants of this genus having the habit of laurels.

1. *D.* * *Mezereum* L. (common *M.*); flowers subternate lateral sessile appearing before the deciduous lanceolate leaves, tube of the perianth hairy. *E. B.* t. 1381.

Rare, in woods in England. Hampshire (perhaps truly wild), Sussex, Suffolk, Staffordshire, Worcestershire, Berkshire, and Oxfordshire. *h.* 2—4.—The well-known *mezereon* of our gardens, where its early blossoms and delightful fragrance attract general favour. It forms a bushy *shrub*, bearing numerous purple *flowers* which appear before the *leaves*, and red *berries*, nestled among the foliage. *Flowers* sometimes white.

2. *D.* *Lauréola* L. (common *S.*); racemes axillary of about 5 glabrous drooping bracteate flowers, leaves lanceolate attenuate at the base glabrous evergreen. *E. B.* t. 119.

Woods, thickets, and hedges throughout England, especially in a clay soil. Rare in Scotland, and scarcely indigenous; about Rosslyn and Bothwell. *h.* 1—5.—*Stem* rather stout, erect, 1—3 feet high, but little branched, naked below, leafy above, and hence bearing some resemblance to a palm. *Flowers* drooping, each accompanied by an ovate concave *bractea*. *Berry* ovate, bluish-black, said to be poisonous to all animals except birds.

** *Ovary inferior.* (ORD. LXXIV.—LXXV.)

ORD. LXXIV. SANTALACEÆ *Br.*

Perianth adnate with the ovary; its *limb* 3—5-cleft, with a valvular æstivation. *Stamens* 3—5, opposite to the segments of the perianth, epigynous. *Ovary* 1-celled, with 1—4 *ovules*, pendulous from near the summit of a free central *placenta*. *Style* 1. *Stigma* often lobed. *Fruit* hard, dry, and somewhat drupaceous, 1-seeded. *Albumen* fleshy, with the *embryo* in its axis.—Trees, shrubs, or herbaceous plants. Leaves *alternate* or *nearly so*, without stipules. Flowers *small*.—The true *sandal-wood* of commerce is *Santalum album*; that of the Sandwich

Islands, *Santalum Freycinetianum*. As in the preceding nearly allied Order of THYMELACEÆ, the bark is remarkably tough.

1. THESÍUM Linn. Bastard-Toadflax.

Perianth 4—5-cleft, persistent. *Stamens* with a small fascicle of hairs at their base. *Stigma* simple. *Drupe* crowned with the persistent perianth.—Name: Θησία were the games instituted in honour of *Theseus*, and a plant, used to form the crown then competed for, obtained the name Θησειον,—but from Pliny's description it was very different from ours.

1. *T. linophyllum* L. (*Lint-leaved B.*); stems procumbent or ascending, leaves linear-lanceolate 1-nerved, racemes simple or paniced leafy, peduncles and pedicels with 3 bracteas, pedicels usually as long as the flower spreading in fruit, their angles and the edges of the bracteas and upper leaves denticulate-scabrous, fruit oval-oblong. *E. B.* t. 247. *T. humifusum* DC. *Fl. Fr.* *T. divaricatum* Jan.: *A. DC. Prodr.*

Elevated chalky pastures, Cambridgeshire, Norfolk, and the south of England. *h.* 5—7.—A true parasite. *Roots* woody, sending forth several herbaceous, spreading, leafy stems, terminated by the somewhat paniced leafy racemes. *Segments* of the *perianth* white, involute. *Stigma* capitate. *Fruit* strongly ribbed longitudinally with 5 principal and 10 secondary nerves, scarcely reticulate. Although the names *linophyllum* and *humifusum* be applied to several different varieties and even distinct species, and although the cultivated specimen first known to Linnæus be now conjectured to be *T. ramosum* of Hayuc, his synonyms indicate that he had this species principally in view: and therefore there seems no good reason for suppressing the name restricted to this species by Smith, and retaining the much more modern one of *T. divaricatum*, as proposed by Alphonse De Candolle; besides, *T. ramosum* agrees in too many points with *T. linophyllum* to be truly distinct.

[2. *T. *húmile* Vahl (*erect B.*); stems erect branched from the base, leaves linear 1-nerved fleshy, racemes spicate, flowers nearly sessile tribracteate.

Near Dawlish, Devonshire: *Mr. C. C. Babington*. ☉ or ♂. 7, 8.—We have seen no British specimen of this species; Vahl's plant was obtained from the north of Africa, and it is most unlikely to be indigenous to England. *Fruit* with 10 longitudinal ribs, and more or less distinctly reticulate with oblique veins.]

ORD. LXXV. ARISTOLOCHACEÆ Juss.

Perianth below adnate with the ovary, above free, campanulate or tubular, with a usually irregularly lobed and often dilated limb. *Stamens* 6—10 or 12, epigynous. *Ovary* 3—6-

celled: *ovules* numerous. *Style* simple. *Stigma* rayed. *Fruit* 3—6-celled, many-seeded. *Albumen* fleshy, with the minute *embryo* at its base. — Herbs or shrubs, often climbing. Leaves *alternate*. Wood without concentric zones. — Active emmenagogues.

1. ARISTOLOCHIA. Perianth tubular, very oblique: anthers 6, sessile on the style.
2. ASARUM. Perianth campanulate, equal, 3-cleft. Stamens 12.

1. ARISTOLÓCHIA Linn. Birthwort.

Perianth tubular, often swelling at the base, the mouth dilated on one side. *Anthers* 6, sessile on the short *style*. *Stigma* with 6 lobes. *Capsule* 6-celled. — Name originating in its supposed medicinal virtues.

1. A. **Clematilis* L. (common B.); creeping, stem erect simple, leaves heart-shaped stalked glabrous, flowers aggregate erect, lip oblong shortly acuminate. E. B. t. 398.

Naturalized among old ruins in the east and south of England. 4. 6—9. — *Flowers* pale yellow, swollen at the base; the swollen part covered on the inside with stiff hairs pointing downwards. When the flower is expanded it is not uncommon for a little insect (*Tipula pennicornis*) to enter it, the stiff hairs preventing its egress until it has brushed off the pollen from the anthers upon the stigma; the perianth then withers, the hairs become flaccid, and the insect makes its escape.

2. A'SARUM Linn. Asarabacca.

Perianth campanulate, 3 cleft. *Stam.* 12, from the top of the *germen*, at the base of the *style*. *Stigma* with 6 lobes. *Caps.* 6-celled. — Named from *a*, *not*, and *σαπρω*, to *adorn*; because it was rejected from the garlands of flowers employed by the ancients.

1. A. **Europæum* L. (*Asarabacca*); leaves in pairs reniform obtuse. E. B. t. 1083.

Woods in the North. Wiltshire, Lancashire, Westmoreland, and near Halifax. Near Linlithgow. 4. 5. — *Stem* very short. *Leaves* 2, petiolate, shining; from the axil of these 2 leaves springs a solitary, rather large, drooping flower borne upon a short foot-stalk, of a greenish-brown colour and coriaceous substance. *Segments* of the *perianth* incurved. *Filaments* produced beyond the cells of the *anthers*, as in the genus *Paris*. *Roots* aromatic, and said to be purgative and emetic.

II. *Flowers generally separated, monœcious or diœcious.*
(ORD. LXXVI. — LXXXVII.)

* *Flowers scattered or tufted. Ovary superior.*
(ORD. LXXVI. — LXXXI.)

ORD. LXXVI. EMPETRACEÆ Nutt.

Diœcious. *Perianth* of 4—6 hypogynous persistent scales in two rows (often surrounded by several imbricating similar bracteas); scales of the inner row (*petals?*) alternating with those of the outer, rarely united into one piece. *Stamens* 2—3, opposite to the scales of the outer row. *Filaments* elongated, protruded, persistent. *Anthers* 2-celled, opening longitudinally. *Ovary* free, on a fleshy disk, 2—9-celled: *ovules* solitary, erect or ascending from near the base of the cell. *Style* 1, short. *Stigma* rayed, with as many or twice as many divisions as there are cells; each division usually laciniate, rarely subulate and entire. *Fruit* fleshy, with 2—9 bony *nucules*. *Seeds* solitary, ascending. *Embryo* slender, in the axis of fleshy watery *albumen*. *Rudicle* inferior.—*Small shrubs, with heath-like leaves, without stipules and with small flowers.*—Of dubious affinity.

1. E'MPETRUM Linn. Crow-berry.

Barren fl. *Perianth* of 6 scales (with external imbricating similar bracteas), of which the 3 inner are spreading, and petaloid. *Stam.* 3. *Rudiment* of a pistil, with a many-cleft stigma.—*Fertile fl.* *Perianth* as in the barren. *Germen* globose. *Style* short. *Stigma* dilated, peltate, 6—9-rayed; rays laciniate. *Fruit* globose, with 6—9 seeds.—Named from *εν, in*, and *παιρος*, a stone; growing in stony places.

1. *E. nigrum* L. (*black C.*, or *Crake-berry*); procumbent, leaves linear-oblong, stigma with 9 rays. *E. B. t.* 526.

Heaths in the North, abundant, chiefly in mountainous parts, but sometimes close to the sea, as near Gourrock on the Clyde. *h.* 4—6.—A small procumbent, much-branching shrub, whose leaves have their margins so recurved as nearly to meet behind, leaving only a white central line. *Flowers* axillary towards the summit of the branches, small, purplish. *Berries*, or rather *drupes*, black, affording abundant food to the moor-game.

ORD. LXXVII. EUPHORBIACEÆ Juss.

Anthers and *pistils* in distinct flowers. *Perianth* free, 3-4-(or more) cleft, or wanting.—*Barren flowers.* *Stamens* 1 or many. *Anthers* 2-celled.—*Fertile flowers.* *Ovary* 1, 2—3 celled. *Ovules* solitary or in pairs, pendulous. *Styles* 2—3. *Stigmas*

2—3, 2-lobed or compound. *Capsule* of 2—3, 1- or 2-seeded united *carpels*, usually bursting and separating with elasticity from the common axis, sometimes indehiscent or nearly so. *Seeds* suspended. *Embryo* in the axis of fleshy *albumen*; *cotyledons* large, flat; *radicle* superior.—Herbs, shrubs, or trees. Leaves, *alternate, opposite, or whorled, sometimes none*.—Acrid, often milky, vegetables, yielding food and poison, medicine, dye, and caoutchouc or India-rubber. The embryo is powerfully acrid and dangerous, the albumen innocuous and even eatable. *Castor oil* is extracted from the seed of *Ricinus communis*: *casarilla* of Europe is *Croton Eleuteria*: *oil of tiglium* is from *Croton Tiglium*, a drastic purgative: *turnsol*, a valuable dye and a highly acrid and drastic plant, is *Crotophora tinctoria*. *Janipha Manihot*, a most poisonous plant, affords the esculent *cassava*. The *caoutchouc* of Guiana is the inspissated juice of *Siphonia elastica*. *Euphorbia officinarum, antiquorum, and Canariensis* give the *euphorbium* of commerce.—The above character of the Order applies to the British genera, but not to many foreign ones, which would require it to be much more extended, some having scales or petals within the perianth.

1. MERCURIALIS. Barren and fertile flowers separate. Perianth 3-partite. Stam. 9—12. Styles 2, simple. Caps. 2-celled, 2-seeded, loculicidal.
2. EUPHORBIA. Stamens (12 or more) and 1 pistil collected within a campanulate involucre. Styles 3, bifid. Capsule 3-celled, 3-seeded, thin and crustaceous, septicidal.
3. BUXUS. Flowers aggregate, barren ones usually with a fertile central one. Perianth 4-partite, with 1—3 bracteas at the base. Stam. 4. Styles 3. Caps. 3-celled, 6-seeded, coriaceous, 3-beaked.

1. MERCURIÁLIS Linn. Mercury.

Dicæious or monæcious.—*Barren fl.* Perianth single, tripartite. Stam. 8—12 (or more), without any rudiment of an ovary; *anthers* of two globose lobes.—*Fertile fl.* Perianth single, tripartite. *Filaments* 2—3, without *anthers*. Styles 2, simple. Ovary 2-celled, 2-ovuled. Caps. 2-celled; cells 1-seeded, bursting at the back.—So named, because the god *Mercury* is said to have discovered the virtues, of what kind soever they may be, of this plant.

1. *M. perennis* L. (*perennial* or *Dog's M.*); creeping perennial and diæcious, fertile flowers in stalked lax spikes, stem perfectly simple, leaves rough.—*α.* leaves lanceolate stalked. *E. B. t.* 1872.—*β.* leaves ovate subsessile. *M. ovata* Steud. et Hoppe.

Woods and shady places abundant.—*β.* Hedge-rows near Hurstpierpoint, Sussex. 4. 3—5.—About 1 foot high. Leaves mostly on

the upper part of the *stem*, ovate or lanceolate, serrate. Both kinds of *flowers* are in axillary lax *spikes*. The *plant* when drying often becomes of a bluish or blackish green.

2. *M. ánnua* L. (*annual M.*); fertile flowers whorled nearly sessile, stem with opposite branches, leaves glabrous, root fibrous annual.—*a.* diœcious, leaves ovate or ovate-oblong, sterile flowers in lax spikes. *E. B. t.* 559.—*β.* monœcious, leaves lanceolate, sterile and fertile flowers whorled intermixed. *M. ambigua* L. *fil.*: *Bab.* in *E. B. S. t.* 2816.

Waste places about towns and villages, not common.—*β.* Jersey. Isle of Wight. ☉. 7—11.—*Stem* about 1 foot high. *Var. β.* has certainly a very different appearance, but De Candolle and most authors do not consider it distinct.

2. EUPHÓRBIA Linn. Spurge.

Involucre of one piece, resembling a perianth, including one fertile and several barren flowers, 5-cleft with 4—5 glands alternating with the segments.—*Barren fl.* A single *stamen* without a perianth.—*Fertile fl.* A single *pistil* without a perianth (or rarely a very minute one). *Ovary* 3-lobed, 3-celled, 3-ovuled. *Styles* 3-cleft. *Caps.* separating elastically from the axis into 3 *cocci*, each bursting along the inner angle towards the apex and 1-seeded.—Named from *Euphorbus*, physician to Juba, king of Mauritania, who brought the plant into use.

* *Leaves with stipules. Glands of the involucre with small membranous processes beneath.*

1. *E. Péplis* L. (*purple S.*); stem procumbent forked, leaves oblong heart-shaped nearly entire, flowers axillary solitary, glands of the involucre circular on the outside, capsule smooth keeled, seeds smooth (white). *E. B. t.* 2002.

Sandy coast, in Devon and Cornwall. Channel Islands. ☉. 7—9.—Remarkable for its procumbent *stems*, of a glaucous hue, much tinged with purple, and stipuled *leaves*.

** *Leaves without stipules. Glands of the involucre without membranous processes beneath.*

† *Glands of the involucre suborbicular or transversely oval.*

2. *E. Helioscópia* L. (*Sun S.*); umbel of 5 principal 3-fid and bifid branches, bracteas and leaves obovato-cuneate serrate upwards, glands of the involucre suborbicular, capsule glabrous, seeds reticulate and pitted. *E. B. t.* 883.

Abundant in waste and cultivated ground. ☉. 6—10.—The acrid milky juice is employed to destroy warts.

3. *E. platyphýlla* L. (*broad-leaved warted S.*); umbel of about

- 5 principal 3-fid and bifid branches, bracteas cordate, leaves broadly obovato-lanceolate acute finely serrulate, glands of the involucre (yellow) oval, capsule warted, seeds smooth (brownish). *Jacq. Ic. Rar.* t. 376. — *α*. stamens 7—8 in each involucre, tubercles of capsule shortly conical. *E. stricta* L.: *E. B.* t. 333 (starved specimens). — *β*. stamens rarely more than 2 in each involucre, tubercles of capsule prominent cylindrical. *E. stricta* Koch.

Corn-fields; Albourne, and near Henfield, Sussex (exactly corresponding with Jacquin's plant); Isle of Wight (frequent); Tunbridge Wells, and elsewhere in Kent; Essex, Cambridgeshire, Suffolk, and probably other counties. — *β*. Limestone woods in Gloucestershire and Monmouthshire. ☉. 6—10. — *Leaves* and *capsules* glabrous or hairy. *Seeds*, in the variety or species called *E. pubescens*, rough with minute points. In *β*. the involucre, capsule, and seeds are only half the size of those of *α*.; but we fear that and the above characters, which we have taken from Mr. Babington, are not sufficient to prove its claims to specific distinction.

4. *E. Hiberna* L. (*Irish S.*); umbel of about 5 principal branches, bracteas and leaves ovate or elliptical entire, glands of the involucre 4 (purple) kidney-shaped, with intermediate rounded lobes, capsule warted glabrous, seeds smooth. *E. B.* t. 1337.

In hedges and thickets, in the south of Ireland. N. Devon. *γ*. 5—6. — *Stem* $1\frac{1}{2}$ —2 feet high.¹

5. *E. palustris* L. (*Marsh S.*); “umbel irregular about 5-cleft then 3-fid and bifid, bracteas all elliptical glabrous entire, leaves broadly lanceolate minutely serrate slightly hairy, glands of the involucre 4 transversely oval, capsules warted hairy, seeds obovate minutely punctate smooth.” *Bab.: Forst.* in *Linn. Trans.* xvii. p. 536. *E. pilosa* L.: *E. B. S.* t. 2787.

Shady places. Prior Park Lane, near Bath; *Lobel* before 1576, and *Johnson* in 1634. *γ*. 5, 6. — We follow Mr. Babington in the character of this and the following species, and Mr. E. Forster for the name here adopted. The species chiefly known under this name on the continent has glabrous capsules, and is perhaps not sufficiently distinct from *E. Hiberna*.

6. *E. *coralloides* L. (*Coral-like hairy S.*); “umbel 5-fid then 3-fid and 2-fid, bracteas ovate-oblong the tertiary ones ovate, all hairy, leaves lanceolate minutely serrate woolly, glands of the involucre transversely oval, capsules nearly even woolly, seeds obovate minutely punctate and with faint reticulate bands.” *Bab.: E. B. S.* t. 2837.

¹ According to the late Dr. Taylor, this plant is extensively used by the peasantry of Kerry for poisoning, or rather stupifying, fish, in the same manner as the exotic *E. piscatoria*. So powerful are its qualities, that a small creel or basket, filled with the bruised plant, suffices to poison the fish for several miles down a river.

Slinfold, Sussex, in hedges; supposed to have been introduced.
♂ ? 5, 6.—Mr. Roeper states that the seeds of the true *E. coralloides* L. are almost opaque, while in *E. palustris* they are shining.

†† Glands of the involucre triangular, or lunate on the outside, or 2-horned.

‡ Bracteas distinct at the base.

7. *E. *E'sula* L. (*leafy-branched S.*); umbel of many principal branches and several scattered peduncles below, bracteas cordate obtuse mucronate, leaves thin linear- or oblong-lanceolate mostly entire, glands of the involucre lunate with two short horns, capsules glabrous minutely granulated, seeds obovate smooth. *E. B.* t. 1399.

Woods. Northumberland. Near Edinburgh. Banks of Tweed, near Coldstream. 2. 7.

8. *E. *Cyparissias* L. (*Cypress S.*); umbel of many principal branches and several scattered peduncles below, bracteas cordate obtuse without a mucro, leaves thin linear entire glabrous, glands of the involucre lunate with two short horns, capsules minutely granulated, seeds obovate smooth. *E. B.* t. 840.

Woods. Staffordshire, Bedfordshire, Northumberland, Westmoreland. Near Edinburgh. 2. 6, 7.—Readily distinguished by its narrow linear leaves.

9. *E. Parálias* L. (*Sea S.*); umbel of about 5 principal bifid branches often with inferior scattered ones, bracteas somewhat reniform-cordate concave, leaves coriaceous obovate- and linear-lanceolate (generally) imbricated glaucous entire concave, glands of the involucre (5) lunate with short points, capsules wrinkled, seeds smooth. *E. B.* t. 195.

Sandy sea-coast of England, and near Dublin, but not general. 2. 8—11.—Stems numerous from the same root, woody below. Leaves very closely imbricated, especially on the young shoots.

10. *E. Portlándica* L. (*Portland S.*); umbel with about 5 principal dichotomous branches and several inferior scattered ones, bracteas triangular-cordate, leaves alternate scattered thin obovato-lanceolate generally obtuse and submucronate, glands of the involucre (4) lunate with two long horns, capsules rough at the angles, seeds dotted (almost white). *E. B.* t. 441.

Sandy sea-coast, in the extreme south and west of England; Wales; Isle of Man. South of Scotland. Dublin. 2. 5—9.—Stem 6—10 inches high. This appears to be unknown on the continent, unless it be, as supposed by M. Duby, and affirmed by Mr. Bentham, a maritime variety of *E. segetalis*.

11. *E. Péplus* L. (*petty S.*); umbel of about 3 principal branches, bracteas ovate, leaves alternate scattered thin broadly obovate on short stalks entire glabrous, glands of the involucre lunate the horns very long, capsules smooth with the angles keeled and scabrous, seeds dotted. *E. B. t.* 959.

Cultivated and waste-ground, abundant. ☉. 7—11.

12. *E. exígua* L. (*dwarf S.*); umbel of generally 3 principal forked branches, leaves alternate scattered linear-lanceolate as well as the bracteas rather rigid entire glabrous often truncate and mucronate, glands of the involucre roundish with two horns, capsules nearly smooth slightly tuberculate on the angles, seeds angular wrinkled or reticulated. *E. B. t.* 1336.

Corn-fields, in a light soil, frequent. ☉. 7—10. — *Stem* 4—6 inches high, branched at the base. *Seeds* small, white, nearly 4-angled.

13. *E. * Láthyris* L. (*Caper S.*); umbel of 3—4 principal bifid branches, bracteas cordate-acuminate, leaves somewhat coriaceous entire opposite and 4-farious on the first year's stem, oblong-lanceolate and cordate at the base on the second year's shoot, glands of the involucre lunate with 2 dilated blunt horns, capsules glabrous with a deep longitudinal furrow, seeds rough. *E. B. t.* 2255.

Thickets and underwoods. Warley, near Bath; Ufton, near Reading; East Marden, Essex; Arundel, Sussex; Steep Holmes in the Severn. Crawfordland, near Kilmarnock; Comrie Den, near Dunfermline; &c. ♂. 6, 7.

‡‡ *Bracteas united at the base, as if one perfoliate leaf.*

14. *E. amygdaloídes* L. (*Wood S.*); umbel of about 5 or 6 principal branches and several scattered peduncles below, leaves thinly coriaceous obovato-lanceolate hairy beneath attenuate at the base entire, glands of the involucre (yellow) lunate with 2 horns, capsules minutely tuberculate glabrous, seeds smooth. *E. B. t.* 256. *E. sylvatica* L.

Woods and thickets in England, especially in a clay soil. South of Ireland. ♀. 3—5.—*Stems* red, almost shrubby.

[*E. Characias* L.: *E. B. t.* 442, has been said to grow in Needwood Forest, Staffordshire, but is not found there now, and was obviously an outcast from gardens. It belongs to this section, is shrubby, and has the glands of the involucre (purple) bluntly lunate.]

3. *Búxus* Linn. Box.

Flowers monœcious, aggregate, axillary.—*Barren fl. Perianth* of 4 leaves (2 inner opposite ones smaller) with one

bractea at the base. *Stamens* 4, inserted under the rudiment of an ovary.—*Fertile fl.* *Perianth* as in the *barren fl.*, with 3 *bracteas* at the base. *Styles* 3. *Ovary* 3-celled, 6-ovuled. *Caps.* with 3 beaks, 3-celled; cells 3-seeded.—Name altered from *πυζος*, the Greek name for this tree.

1. *B. sempervirens* L. (*common B.*); leaves oval-oblong retuse convex coriaceous shining, their stalks slightly hairy, anthers ovato-sagittate. *E. B.* t. 1341.

Dry chalky hills, in the south of England; rare. *h.* 4—6.—A small tree when suffered to attain its natural stature. A dwarf *var.* is extensively employed as edgings in gardens. The wood is of great value for turning, carving, and engraving upon.

ORD. LXXVIII. CALLITRICHACEÆ Lindl.

Flowers axillary, solitary, very minute, imperfect, monœcious, with 2 fistular white *bracteas* (sometimes wanting in the fertile fl.) at the base. *Perianth* 0.—*Barren fl.* *Stamen* 1 or rarely 2; *filament* filiform, furrowed along the middle; *anther* reniform, 1-celled, opening transversely by 2 valves at the summit.—*Fertile fl.* *Ovary* solitary, 4-angled, 4-celled, with a solitary ovule in each cell suspended from the axis a little above the middle. *Styles* 2, subulate. *Stigmas* punctiform. *Fruit* dry, 4-celled, 4-lobed; the lobes 1-seeded, indehiscent, laterally compressed, cohering at the axis, otherwise free. *Seeds* attached by the middle. *Embryo* in the axis of fleshy *albumen*; *radicle* superior, long; *cotyledons* short, semiterete.—*Small aquatic herbaceous plants*, with *opposite*, *simple*, *entire* leaves.

1. CALLITRICHE Linn. Water-Starwort.

Char. that of the Order.—Name: *καλος*, *beautiful*, and *τριξ*, *τριχος*, *hair*; its stems being long and slender, and resembling hairs.

1. *C. verna* L. (*vernal W.*); fructiferous peduncles very short with 2 falcate bracteas at their base, fruit regularly tetragonal, each lobe keeled or slightly winged at the back.—*α.* lobes of the fruit bluntly keeled. *C. aquatica* Huds.: *E. B.* t. 722.—*β.* lobes of the fruit slightly winged at the back. *C. platycarpa* Kutz.: *E. B. S.* t. 2864.

Ditches, pools, and slow streams, abundant. ☉. 4—9. This varies much, as do almost all aquatic plants, in its foliage. Upper and floating leaves generally oval and stalked, 2-ribbed; lower ones single-ribbed, linear; rarely all linear; in muddy places, where the water has nearly dried up, there are no submerged or linear leaves, all being oval or obovate. Our *var. α.* is said to have the *styles*

constantly erect, *var. β.* to have them reflexed when in fruit; but in the former we find them to be usually as much reflexed as in the other. Mr. Bentham considers that there is but one species of the genus (*C. aquatica*), which has been "variously divided into from 2 to about 20 supposed species; but the distinctive characters which have been given all fail when applied to a large number of specimens collected in different parts of the world."

2. *C. pedunculata* DC. (*pedunculated* W.); fructiferous peduncles without bracteas at the base, fruit regularly tetragonal, each lobe bluntly keeled at the back. *C. autumnalis* Hook. in *E. B. S.* t. 2606 (*excl. the syn.*).

Ditches in Jersey, Sussex, Shropshire, Wales, &c. ☉. 6—9.—*Fruit* sometimes almost sessile.

3. *C. autumnalis* L. (*autumnal* W.); fructiferous peduncles very short without bracteas at the base, fruit irregularly tetragonal, each lobe broadly and acutely winged at the back. *E. B. S.* t. 2732. *C. aquatica γ.* Huds.: *E. B.* t. 722 (*the small figure*).

Ditches and lakes. Anglesea. Loch of Cluny, Perthshire; Lochs near Forfar; Loch of Drum, Kincardineshire; Scotland. Cong, County Mayo. ☉. 6—10.

ORD. LXXIX. CERATOPHYLLACEÆ Gray.

Flowers imperfect, monœcious. *Perianth* (involucre?) single, free, 10—12-cleft.—*Barren fl.* *Anthers* 12—20, sessile, 2-celled, 2—3-cuspidate.—*Fertile fl.* *Ovary* superior, solitary, bicuspidate above the base, 1-celled, with one pendulous *ovule*. *Style* oblique, filiform, at length hardened, persistent. *Stigma* simple. *Fruit* an *achene*, 1-seeded. *Albumen* 0. *Embryo* straight; *cotyledons* 2, oval, fleshy; *plumule* many-leaved, highly developed, its lower pair of leaves being separated from the others by an internode and close to the cotyledons, thus resembling two narrow inner ones decussating with the outer; *radicle* inferior.—*An aquatic Order comprising one genus of doubtful affinity.* Leaves whorled, rigid, dichotomous, with narrow serrate segments.

1. CERATOPHYLLUM Linn. Hornwort.

Character same as of the Order.—Name: *κερας*, *κερατος*, a horn, and *φυλλον*, a leaf; from the forked leaves.

1. *C. demersum* L. (*common* H.); achene armed with two long rigid spines near the base and terminated by the longish subulate style.—*α.* spines of the fruit terete. *E. B.* t. 947. *C. oxyacanthum* Cham.—*β.* *spines of the fruit laterally compressed and winged at the base. *C. platycanthum* Cham.

Frequent in slow streams, ditches, and canals. 2. 6, 7. — Floating. Stem long, slender. Leaves 2 or 3 times forked, distantly serrate. Flowers small, axillary. Our var. α . is the only one yet observed in this country; β . is the most common in Germany, and may have been passed over with us as the same as α .

2. *C. submersum* L. (*unarmed H.*); achene without spines near the base terminated by the usually short style. — α . fruit without 2 conspicuous tubercles at the base, style very short. *E. B.* t. 679. *C. muticum* Cham. — β .* fruit without 2 conspicuous tubercles at the base, style elongated. *C. muricatum* Cham. — γ .* fruit with two tubercles at the base otherwise smooth, style elongated. *C. submersum* DC. *C. apiculatum* Cham.

Ditches in the east and south of England, rare. 2. 6, 7. — Mr. Babington states that the ripe fruit of var. α . is covered with tubercles; in our β ., according to Chamisso, it is similar. As far as we know, neither β . nor γ . have been found in this country; but as this species very seldom bears flowers or fruit, it and its varieties can rarely be distinguished. The var. γ . connects this with the last species; so that, taking also into consideration the great variation to which aquatics are subject in all the organs of vegetation and reproduction, Mr. Bentham is probably correct when he unites the various forms of the genus into one species.

ORD. LXXX. URTICACEÆ Juss.

Flowers generally monœcious or diœcious (very rarely some of them perfect), scattered, or amentaceous, or aggregate, on a fleshy persistent receptacle. Perianth divided, persistent or wanting. Stamens definite, distinct, opposite the lobes of the perianth and inserted at its base when there is one. Ovary free, 1-celled. Ovule solitary. Fruit usually an achene, often several combined and immersed in the persistent fleshy perianths or upon or within large fleshy receptacles. Embryo with the radicle superior. — Trees, shrubs, or herbs, with stipules, often stinging and sometimes milky. — This has been divided into four Orders or Sub-Orders. I. URTICEÆ, containing the *nettles*, &c., the fibre of the inner bark of some of which is very tenacious. II. CANNABINEÆ, yielding *hemp* from the genus *Cannabis*, and a narcotic bitter from the same and also from the *hop*. III. MOREÆ (known by the flowers in heads, spikes, or catkins, stamens incurved during æstivation, hooked embryo and fleshy albumen); to which belong *Morus alba*, producing the *mulberry*; *M. tinctoria*, the dye called *fustic*; *Broussonetia* or the *paper mulberry*. IV. ARTOCARPEÆ (having the flowers in dense heads, spikes, or catkins, stamens straight during æstivation, a very short radicle, milky juice, and almost always alter-

nate leaves), to which are referred the famous *bread-fruit* or *Artocarpus incisa*, and the *jak-* (or *jack-*) *fruit*, *A. integrifolia*; *Antiaris toxicaria*, the celebrated *poison-tree*, or *upas*, of Java; and the *Galactodendron utile* Humb., or *cow-tree* of South America, from which flows a milk which is esteemed a most nutritive beverage by the natives: also *Ficus Carica*, yielding the luscious *fig*; *Urostigma elasticum*, one of the plants that produce *caoutchouc* or *India-rubber*; *Dorstenia*, a species of which is the *Contrainerva*.

1. URTICA. Stamens 4. Perianth of fertile flowers 2-sepaled. Stigma 1, sessile, penicillate.
2. PARIETARIA. Stamens 4. Perianth of fertile flowers 4-cleft. Style 1, conspicuous. Stigma 1, penicillate.
3. HUMULUS. Stam. 5. Perianth of fertile flowers a mere scale. Stigmas 2, sessile, filiform.

SUB-ORD. I. URTICEÆ. *Flowers usually separate from each other. Filaments curved inwards during æstivation, then bending outwards. Anthers inverted in æstivation. Style and stigma 1. Ovule erect. Embryo straight, in the axis of fleshy (but often thin) albumen. Stipules small.*

1. URTICA Linn. Nettle.

Monœcious or diœcious.—*Barren fl.* Perianth of 4 sepals, containing the rudiment of a *pistil*. *Stam.* 4.—*Fertile fl.* Perianth of 2 sepals, with sometimes 2 external smaller ones or bracteas. *Stigma* 1, sessile, penicillate. *Fruit* an *achene*.—*Leaves opposite*.—Named from *uro*, to *burn*; in allusion to its stinging property.

1. U. * *pilulifera* L. (*Roman N.*); leaves ovate or cordate acuminate with transverse nerves, spikes in pairs, fertile ones dense globular, achenes minutely granular shining, root annual.—*α.* leaves usually coarsely toothed. *E. B.* t. 148.—*β.* leaves nearly entire. U. *Dodartii* L. U. *integrifolia* Lam.

Under walls and among rubbish, about towns and villages in England, principally near the sea, but nowhere well established. Ballylickey, south of Ireland.—*β.* Copford, Essex; Upwell, Norfolk; Wisbeach, Cambridgeshire. ☉. 6—8.—The most venomous of our British nettles. U. *Dodartii* is only known as a cultivated plant, and therefore may be looked upon as a very suspicious native, although the above localities have been given for it.

2. U. *urens* L. (*small N.*); leaves elliptical serrate with about 5 nearly parallel ribs, spikes in pairs oblong nearly simple shorter than the petiole, achenes obscurely granular opaque, root annual. *E. B.* t. 1236.

Waste places and cultivated ground, frequent. ☉. 6—9.

3. *U. dioica* L. (*great N.*); leaves ovate acuminate or ovate-lanceolate serrate cordate or rounded at the base, spikes in pairs mostly diœcious much branched longer than the petiole, root perennial. *E. B. t.* 1750.

Waste places under walls and hedge-banks, frequent. γ . 6—9.—When the leaves are broad they are cordate; when narrow, rounded at the base; but transitions may be observed on the same specimen. *Filaments* transversely wrinkled and elastic as in *Parietaria*. *Fertile perianth* often with two small *bracteas* at the base.

2. PARIETÁRIA Linn. Wall-Pellitory.

Polygamous. *Perianth* 4-fid. *Stam.* 4, wanting in some flowers; *filaments* transversely wrinkled, at first incurved, then bending back with elastic force. *Style* filiform. *Stigma* penicillate. *Achene* shining, enclosed by the *perianth*.—Leaves *alternate*.—Named from *paries*, a wall; the species frequently growing on old walls.

1. *P. officinális* L. (*common W.*); leaves oblong-ovate or ovate-lanceolate attenuate at both ends 3-nerved above the base, involucre of two 3—7-lobed segments with an alternating bractea 3—7-flowered, flowers sessile, that between the segments with a pistil only, one only on each segment perfect at length enlarged tubular coloured and longer than the stamens, the others (when present) barren always short and campanulate.— α . involucre mostly 3-flowered, stems ascending or diffuse. *E. B. t.* 879. *P. ramiflora* Mœnch. *P. diffusa* Koch.— β involucre mostly 7-flowered, stem usually erect. *P. officinális* Spr. *P. erecta* Koch.

Old walls and waste places among rubbish.— β . more rare. Essex; Pembroke; North Wales, Stirling and Linlithgow. γ . 6—9.—*Stems* reddish, pubescent. *Flowers* hairy, clustered in the axils of the leaves. The structure of the clusters in this genus we have explained fully in the 6th and 7th editions of this Flora, to which we refer; and when correctly understood the difference between our two varieties ceases to be of specific importance.

SUB-ORD. II. CANNABINÆ. *Diœcious. Barren fl. racemose or panicled. Filaments of stamens straight and anthers erect during æstivation. Stigmas 2, sessile, filiform. Ovule pendulous. Embryo hooked or spiral, with a long radicle, without albumen. Stipules small. Juice watery.*

3. HÚMULUS Linn. Hop.

Barren fl. Perianth 5-partite. *Stam.* 5. *Anthers* with 2 pores at the extremity. *Fertile fl.* in a catkin, the scales (pe-

rianth?) concave, entire, single-flowered, at first enveloping the *ovary*, afterwards persistent and enlarged. *Perianth* 0, except the scale. *Embryo* spiral.—Name: *humus*, rich soil, or mould; in which the plant flourishes.

1. H. **Lúpulus* L. (common H.): F. B. t. 427.

Thickets and hedges in various places; indigenous? in the south of England. 4. 7, 8.—*Stems* long, weak and twining, scabrous. *Leaves* petiolate, opposite, 3—5-lobed, serrate, veiny, rough. *Flowers* greenish-yellow.

ORD. LXXXI. ULMACEÆ Mirb.

Flowers perfect or polygamous, not in catkins. *Perianth* membranous, inferior, campanulate, and 3—8-cleft, or 5-partite; segments imbricated in æstivation. *Stamens* definite, inserted into the base of the perianth, as many as and opposite to its segments. *Anthers* 2-celled, erect in æstivation. *Ovary* free, 1—2-celled. *Ovules* solitary in each cell, pendulous or suspended. *Stigmas* 2, distinct, elongated. *Fruit* 1-celled, 1-seeded, indehiscent, dry, or drupaceous. *Seed* pendulous, without or with little (fleshy) *albumen*.—Trees or shrubs, with *scabrous*, *alternate*, *distichous*, *stipuled* leaves; allied to Rhamnaceæ, according to Lindley; but if Celtidæ be combined with them, they are scarcely distinguishable from Urticaceæ, of which they are probably only a Suborder.

1. ULMUS Linn. Elm.

Flowers perfect. *Perianth* persistent, with 3—8 divisions, campanulate or conical at the base. *Stam.* 5. *Filaments* straight in æstivation, not bending back elastically. *Ovary* 2-celled. *Capsule* compressed, winged all round (hence a *samara*).—Named, according to Théis, from the Anglo-Saxon *Elm*; and *Olm* is still the Dutch, and *Ulm* the German word for this tree; but all these are derived from the Hebrew *ul*, to be strong, or vigorous, from the growth of the tree and quality of the timber.

[The English species belong to the subgenus *Dryoptelea* Spach; *Pericarp* subcylindrical-campanulate, equal, 4—6-cleft. *Samara* naked at the margin. *Pedicels* short, densely fasciated. *Leaves* serrate. *Flowers* before the leaves.—As in *Rubus*, *Hieracium*, and *Salix*, the numerous supposed species of this genus require to be much reduced; we shall follow Planchon in the Ann. Sc. Nat. ser. 3. x. p. 272, and Phytol. iii. p. 34.]

1. U. **suberósa* Ehrh. (common E.); leaves shortly acuminate doubly or somewhat simply serrate, flowers (small) 4—5-cleft, segments ciliate, samara broadest above the middle glabrous shortly bifid at the apex, the seminiferous cavity chiefly above

the middle, and extending almost to the notch.—*a. vulgaris*; leaves rhomboid-obovate small (1—3 inches long) scabrous above pubescent below. *U. campestris* Sm. (and most authors, not L.): *E. B. t.* 1886 (*samara cuneate-oblong*). *U. suberosa* Ehrh.: *E. B. t.* 2161 (*samara roundish-obovate*).—*β. major*; leaves larger (2½—5 inches long) scabrous above, pubescent below. *U. major* Sm.: *E. B. t.* 2542?—*γ. lavis*; leaves more or less coriaceous shining and smooth or slightly scabrous above, nearly glabrous beneath except in the axils of the nerves, younger ones stipules and samara with scattered stalked glands, branches pendulous. *U. glabra* Mill.: *E. B. t.* 2248. *U. carpinifolia* Lindl.—*δ. fastigiata*; as in the last, but the branches rigid erect and compact, and the leaves sometimes cuspidate. *U. stricta* Lindl.

Woods and hedges.—*a.* Throughout England.—*β.* in the neighbourhood of London.—*γ.* chiefly in the S. of England and Ireland.—*δ.* Cornwall and North Devon. *h.* 3—5—The first form of our *var. a.*, which grows principally in Norfolk and Sussex, yields the best wood of all the elms. It is said to have been brought to Europe from Palestine by the Crusaders. The other form, although the common elm of England, was not believed to be indigenous so long ago as in the time of Miller. *U. major* is generally considered not to be a native, as the old name *U. Hollandica* imports. The *var. γ.* is the *wych* or *witch-elm*, this name having been applied to it, as also to the next species, probably from having been used for divining rods (see *Corylus Avellana*): some specimens called *U. glabra* belong however to the next. Of *U. stricta* of Lindley the fruit is unknown.

2. *U. campéstris* L. (*broad-leaved E.*, or *Wych-Hazel*); leaves doubly serrate cuspidate, usually scabrous above and pubescent beneath sometimes nearly glabrous, flowers 5—7-cleft, segments ciliate, samara oblong or roundish broadest about or below the middle shortly bifid at the apex, the seminiferous cavity chiefly below the middle and distant from the notch. *U. montana* Bauh.: Sm.: *E. B. t.* 1887.

Woods and hedges, frequent, certainly wild. *h.* 3, 4. — This is certainly the *U. campestris* L. and of Swedish and Danish botanists, as Mr. Borrer long since suspected, and which Dr. Bromfield proved by consulting the Linnæan herbarium: it is the only species wild in the north of Europe. Distinguished at first sight by its large spreading branches and broad leaves appearing just as the “hop-like fruit” comes to perfection, but with more certainty, by the relative position of the cavity and notch of the fruit, a character first indicated by Gaudin, and which may even be observed in the ovary when a little advanced. A variety is called the *weeping elm*. To this Lindley refers also the *giant elm* and *Chichester elm*. The wood is of inferior quality. The late Dr. Bromfield refers here rather than to *U. suberosa* the *U. glabra* of botanists, and says that *U. suberosa* is

marked by a disposition to emit suckers from the root, the seed rarely coming to perfection; while in *U. montana* the bark is smother, there are few or no suckers, and the fruit ripens perfectly.

** *Barren flowers in catkins.* (ORD. LXXXII.—LXXXVII.)

ORD. LXXXII. ELÆAGNACEÆ *Juss.*

Flowers mostly diœcious.—*Barren fl.* somewhat amentaceous. *Perianth* 2—4-parted. *Stamens* 3 or more. *Anthers* 2-celled. — *Fertile fl.* *Perianth* tubular persistent, 2—4-toothed or -cleft. *Ovary* 1, free, 1-celled, with one erect *ovule*. *Style* short. *Stigma* subulate, glandular. *Fruit* crustaceous, enclosed within the fleshy perianth. *Seed* solitary, erect. *Embrya* with a thin fleshy *albumen*; *radicle* inferior.—*Trees or shrubs, with frequently lepræous scales and na stipules.*

1. HIPPOPHAË *Linn.* Sallow-thorn.

Diœcious. — *Barren fl.* collected into a small sort of *catkin*, each scale bearing a flower. *Perianth* bipartite, segments roundish. *Anthers* 4, linear, nearly sessile. — *Fertile fl.* solitary. *Perianth* single tubular, bifid at the summit. — *Name:* in Greek *ἵπποφαη*, apparently a corruption of *ὑποφαη*, from *ὑπο*, *under*, and *φαω*, *to shine*; in reference to the shining scales on the under-sides of the leaves.

1. *H. rhamnâides* L. (*canmon S.*, or *Sea-Buckthorn*): *E. B.* t. 425.

Sand-hills and cliffs upon the east and south-east coasts of England, as Kent, Essex, Norfolk, Lincoln, and Yorkshire. Aberlady on the Forth, and Toward-point on the Clyde; also in Islay and Kintyre, but scarcely indigenous in Scotland. *h.* 5—7.

ORD. LXXXIII. MYRICACEÆ *Rich.*

Flowers monœcious or diœcious, all amentaceous. *Perianth* 0. — *Barren fl.* *Stamens* 2—8. *Anthers* 2- or 4-celled, opening longitudinally.—*Fertile fl.* *Ovary* free, 1-celled, with 1 erect *ovule*, surrounded by hypogynous persistent scales. *Stigmas* 2. *Fruit* drupaceous, often covered with waxy secretions, and with the hypogynous scales becoming fleshy and adherent. *Seed* solitary, erect. *Embryo* without albumen; *radicle* short, superior.—*Shrubs, or small trees, often aromatic, with resinæous glands and alternate leaves.* In *Myrica cerifera*, a copious wax exudes from the berries, employed for economical purposes.

1. MYRICA Linn. Gale.

Scales of the *catkins* concave.—*Barren fl.* *Stam.* 4 or 8.—*Fertile fl.* *Stigmas* subulate. Hypogynous scales sessile, without a gland on the inside.—Name: *μυρική*, in Greek synonymous with the *tamarix*.

1. *M. Gále* L. (*sweet G.*, *Bog-* or *Dutch-Myrtle*); leaves lanceolate broader upwards serrate, stem shrubby. *E. B. t.* 562.

Bogs and moory ground, most abundant, especially in Scotland. *h.* 5—7.—The plant diffuses an agreeable smell: its leaves have a bitter taste, whence they are sometimes employed instead of hops.

ORD. LXXXIV. BETULACEÆ Rich.

Flowers monœcious, all amentaceous.—*Barren fl.* *Scales* of the *catkin* peltate, 1—3-flowered with 2—5 bracteoles. *Perianth* 4-partite or none. *Stam.* 4 and opposite the leaves of the perianth, or 8—12 with 2—3 scales at their base. *Filaments* very short, distinct. *Anthers* erect, 2- (or 1-?) celled.—*Fertile fl.* *Scales* of the *catkin* entire or 3-lobed, 2—3-flowered, enlarging with the fruit. *Perianth* none, or of 4 scales at the base of the ovary. *Ovary* free, 2-celled with a solitary pendulous *ovule* in each cell. *Style* 0. *Stigmas* 2, filiform. *Fruit* compressed, dry and indeliscent, 1-celled, 1-seeded. *Seed* pendulous. *Albumen* 0. *Cotyledons* flat; *radicle* superior.—*Trees* or shrubs. Leaves *alternate*, *simple*, with the *nerves* often running straight from the midrib to the margin. *Stipules* deciduous.

1. BETULA. Perianth of barren fl. 0. Stam. 8—12. Achene winged.

2. ALNUS. Perianth of barren fl. 4-partite. Stam. 4. Achene not winged.

1. BÉTULA Linn. Birch.

Barren fl. *Perianth* 0. *Stam.* 8—12, with 2—3 small scales at the base (indicating 2—3 flowers each of 4 stamens).—*Fertile fl.* *Scale* of the *catkin* 3-lobed, 3-flowered. *Perianth* 0. *Fruit* with a membranous margin.—Name: derived from *betu*, the Celtic name for the birch (*beath* in Gaelic).

1. *B. álba* L. (*common B.*); leaves ovato-deltoid acute doubly serrate, scales of the fertile catkins 3-lobed, fruit broadly obovate with a broad margin. *E. B. t.* 2198.—*α.* lateral lobes of scales decurved. *B. verrucosa* Fries.—*β.* lateral lobes ascending. *B. glutinosa* Fries.

Woods, especially in heathy soils and in mountainous countries. *h.* 4, 5.—There is a *var.* of this tree (*B. pendula* Roth: Lindl. Syn. p. 229), with remarkably drooping branches, which are more verru-

cose than in the common appearance: it is not unfrequent in the Highlands of Scotland, and generally known by the name of the *drooping* or *weeping birch*. There is also another with the young shoots and peduncles downy, which seems to be *B. pubescens* Ehrh. The lateral lobes of the catkin-scales vary, being either erect or spreading, or even decurved, particularly in the *drooping birch*; and although we have admitted the two extremes to mark our varieties, we cannot admit such to be of specific importance.

2. *B. nána* L. (*dwarf B.*); leaves orbicular obtusely crenate glabrous, catkin scales trifid, fruit orbicular with a narrow margin. *E. B. t.* 2326.

In several parts of the Highlands of Scotland. Rare in the Lowlands. *h.* 5.—A small shrubby plant not exceeding 1—2 feet in height. *Leaves* on short footstalks. *Fertile catkins* at the extremity of the branches, small; their scales cleft to the middle or sometimes to near the base, variable in the same specimen.

2. *A'LNU* Tourn. Alder.

Barren fl. *Seale* of the catkin 3-lobed, with 3 *flowers*. *Perianth* 4-partite. *Stam.* 4.—*Fertile fl.* *Seale* of the catkin subtrifid, with 2 *flowers*. *Perianth* 0. *Ovary* with 4 minute scales at its base. *Fruit* without a membranous margin, compressed.—Name: derived by Théis from the Celtic, *al*, *near*, and *lan*, a *river*; but more probably from the Hebrew *aelon*, a *vigorous tree*, and usually applied to the oak.

1. *A. glutinósa* Gærtn. (*common A.*); leaves roundish-cuneiform obtuse lobed at the margin and serrate somewhat glutinous downy in the axils of the nerves beneath. *Betula Alnus* L.: *E. B. t.* 1508.

Wet meadows and moist grounds by water, frequent. *h.* 3—4.—*Sterile catkins* long, large, and cylindrical, pendent, their *footstalks* branched. *Fertile catkins* small, ovate, with deep-red scales.

ORD. LXXXV. SALICACEÆ Rich.

Flowers diœcious, all amentaceous.—*Barren fl.* *Perianth* 0 (replaced by 1—2 nectariferous glands), or oblique and entire. *Stamens* 2—30: *anthers* 2-celled.—*Fertile fl.* *Perianth* 0 or turbinate. *Ovary* free, 1-celled, with numerous erect *ovules* attached to the bottom of the cell or to the base of 2 parietal placentas. *Style* 1 or 0. *Stigmas* 2, entire or cleft. *Fruit* coriaceous, 1-celled (or by the inflexion of the edges of the valves somewhat 2-celled), 2-valved, many seeded. *Seeds* erect, minute, covered with long silky hairs springing from their base. *Albumen* 0. *Embryo* erect; *radicle* interior.—Trees or shrubs. *Leaves* alternate, simple, with often glands on their edge or on the petiole. *Stipules* deciduous or persistent, sometimes none.

1. *SALIX*. Scales of the catkins entire, with 1—2 nectariferous glands, and no perianth. Stam. 1—5.
2. *POPULUS*. Scales of the catkins usually incise, without nectariferous glands. Perianth cup-shaped containing the stam. and pist. Stamens 4—30.

1. *SÁLIX* Linn. Willow. Sallow. Osier.

Scales of the *catkins* quite entire. *Perianth* 0, except 1—2 unilateral nectariferous *glands* between the stamens or pistil and the rachis.—*Barren fl.* Stam. 1 (of 2 combined) or 2—5—*Fertile fl.* Stigmas 2, entire or cloven into two. *Caps.* 1-celled.—Named, according to Théis, from *sal*, *near*, and *lis*, *water*, in Celtic; but the Welsh and Celtic name of the tree is *helig*, the Cornish one *helak*, and the Gaelic and Irish *seileach*, from any of which *Salix* is rather derivable.

[The many important uses rendered by the different species of *willow* and *osier*, serve to rank them among the first in our list of economical plants. The larger kinds, which are, too, of the most rapid growth, yield timber and exceed 60 feet in height; whilst the least of them (*S. herbacea*), which grows on the summits of our Highland mountains, can scarcely be said to rise above the surface of the soil in which it vegetates. Many are in great request for baskets, hoops, and crates: their bark is used by the tanner, and that of one species (*S. fragilis* var. *Russelliana*) as a substitute for the true Peruvian bark. A correct knowledge of them, then, is of primary importance; yet there is not in the whole range of the vegetable creation, a genus liable to more variation in properties, as well as in foliage and general appearance, at different periods of growth, in different soils and situations, and under different circumstances; so that the accurate determination of its species, or even what constitutes a species, has baffled the researches of the ablest botanists.—We shall continue to adopt, with few deviations, the arrangement proposed by Mr. Borrer in the 5th and previous editions of the *British Flora*, and refer our readers there for full notes on all the species or varieties. But it is to be regretted that some general arrangement, not for a local flora only, but for the species of the whole world, were not devised and universally adopted; perhaps none hitherto attempted is superior to that of Koch, with some slight modifications.]

- i. *Filament* 1, with a 4-celled anther, or forked upwards and bearing two 2-celled anthers. Capsules sessile, very pubescent. Catkins appearing before the leaves, lateral, sessile, with 2—3 small leaf-like bractes at the base; scales dark or purple at the end. Leaves linear or lanceolate, green or glaucous (not white and silky) beneath. Branches twigggy. *Monandræ* Borr.¹

1. *S. purpúrea* L. (*purple W.*); filament 1, capsule ovate, style very short or none, stigmas ovate entire or emarginate,

¹ Mr. Bentham unites all of this group into one species under the name of *S. purpurea*.

leaves often opposite broader upwards acuminate serrulate, stipules none. — *α*. decumbent, branches purple. *E. B. t.* 1388 (bitter purple W.). — *β*. erect, young branches purplish or yellow. *S. Lambertiana Sm.*: *E. B. t.* 1359 (Boyton W., leaves lanceolate.) *S. Woollgariana Borr.*: *E. B. S. t.* 2651 (Woollgar's W., leaves cuneate-lanceolate).

Marshes and banks of rivers. *h.* 3—5. — *Anthers* in this and *S. Helix* purple, becoming at length black.

2. *S. Helix* L. (*Rose W.*); filament 1, capsule ovate, style conspicuous, stigmas bifid the segments nearly linear, leaves often opposite lanceolate broadest upwards acuminate serrulate, stipules none. *E. B. t.* 1343.

Marshes and the banks of rivers. *h.* 3, 4. — Mr. Leefe conjoins this with the last: and it only differs by the much longer *style*, and at length cloven *stigmas*: these last are sometimes entire when young, in which case they are ovate, as in *S. purpurea*. *Branches* erect: their *bark* glossy and yellow.

3. *S. Forbyána* Sm. (*fine Basket O.*); "monandrous, erect, leaves with small downy stipules lanceolate-oblong serrate glabrous, style equal in length to the linear divided stigmas." *Borr.*: *E. B. t.* 1344.

Meadows and osier-grounds at Fincham and near Lynn, Norfolk; Cambridgeshire. *h.* 4. — "Stems yellowish-green, glossy. Allied to *S. Helix*, especially in the fructification, but differing in foliage. This species is much esteemed by basket-makers, for the finer sorts of wicker-work." All the flowering fertile specimens we have received or seen cultivated under this name have, however, the *stigmas* linear and entire, and do not differ from the next, with which Mr. Leefe conjoins it on account of its having *stipules* and constantly alternate *leaves*. The true sterile plant is as yet unknown; but Smith, judging from specimens in which some of the styles were converted into stamens, has described the latter as having a simple filament: we do not know the colour of the *anthers*.

4. *S. rubra* Huds. (*green-leaved O.*); filaments 2, united at the base, capsule oblong-ovate, style elongated, stigmas linear undivided, leaves alternate linear-lanceolate (broader in the fertile plant) acuminate serrate, stipules minute. *E. B. t.* 1145.

Low meadows and osier-grounds, rare. Maidenhead; Windsor; near Salisbury; Cambridgeshire; Carlisle. Frequent in hedges and osier-grounds, Scotland. *h.* 4, 5. — A small *tree*, with longer and more lanceolate and acuminate *leaves* than any other in the present group, in the latter particular approaching, as Sir J. E. Smith remarks, *S. viminalis*, but wanting its dense white pubescence. The *stamens* are always more or less combined, below only, into one filament, as in *S. Croweana*, which in other respects is quite a different plant; *anthers* yellow, becoming brown, but scarcely ever black, by drying.

- ii. *Stamens* 3. *Capsules* stalked, usually glabrous. *Catkins* leafy, lax; their scales persistent of the same pale colour throughout: "nectary double," Lecfe. *Leaves* between lanceolate and ovate, glabrous, serrate. *Stipules* shorter than the petiole. *Trees* or large shrubs, casting their bark in autumn. *Triandra* Borr.¹

5. *S. triandra* L. (*blunt-stipuled triandrous* W.); leaves serrate, stipules half-cordate approaching to reniform blunt, scales of the catkins glabrous or slightly hairy, capsule glabrous, stigmas nearly sessile.—*α*. leaves oblong-lanceolate, young branches not furrowed. *E. B. t.* 1435 (long-leaved tr. W.).—*β*. leaves linear-lanceolate green on both sides, young branches furrowed, capsule acuminate. *S. contorta* Crowe.—*γ*. leaves ovato-lanceolate acuminate, young branches not furrowed. *S. Hoffmanniana* Sm.: *E. B. S. t.* 2620 (short-leaved tr. W.).—*δ*. leaves ovate or ovate-oblong glaucous beneath, young branches strongly furrowed. *S. amygdalina* L.: *E. B. t.* 1936 (Almond-leaved W.).

Banks of rivers and ditches and osier-grounds. *h.* 4—6.—The *stipules*, being modified leaves, vary in shape according to the form of the *leaves* themselves; but all the above have stipules of a very different form from the next species, to which however they approach in other respects. *Stigmas* varying from entire to bifid.

6. *S. * undulata* Ehrh. (*sharp-stipuled triandrous* W.); leaves lanceolate much acuminate sharply and finely serrate often wavy, stipules half-cordate acute, scales of the catkins very villous, capsule glabrous (or silky) constricted above the middle, style as long as the bifid or emarginate stigmas. *S. lanceolata* Sm.: *E. B. t.* 1436.

Near Lewes, Sussex (the fertile plant only, and it scarcely a native). *h.* 4, 5.—A small tree, which casts its bark annually. It is cultivated and cut down every year for the use of basket-makers; but Mr. Forbes observes that it is not so well calculated for the finer sorts of wicker-work as *S. triandra*. Dr. Meyer of Göttingen has sent us specimens of the *S. undulata* of Ehrh., compared with the Ehrhartian herbarium; and Mr. Borrer is satisfied that they are identical with Smith's *lanceolata*; at least with the Sussex specimens communicated by Mr. Woollgar to him, and which are probably the same as the fertile individuals figured in *E. Bot.* Indeed that station is the only one mentioned by Sir J. E. Smith as English. Mr. Borrer has received German specimens of *S. undulata* with silky ovaries, and they are probably the *S. undulata* of the *Sal. Wob.*, which differs only in that respect, and in its more wavy leaves, from our present plant.

- iii. *Stamens* more than 2, usually 5, distinct. *Capsules* ovato-lanceolate, stalked, glabrous. *Catkins* rather lax, appearing with the leaves on short

¹ Mr. Bentham unites both species of this section under the name of *S. amygdalina*.

lateral leafy stalks; the scales deciduous before the maturity of the fruit, of the same pale colour throughout: "nectary double," Leece. *Leaves between lanceolate and ovate, glabrous, glossy, and fragrant, exuding a resin from their glandular serratares. Petioles glandular, especially towards the top. Stipules very deciduous. Trees or large shrubs. Pentandræ* Borr.

7. *S. pentándra* L. (*sweet Bay-leaved W.*); leaves elliptical-lanceolate acuminate, stamens 5 or more, style short, stigmas bifid, stalk of the ovary not exceeding twice the length of the gland. *E. B. t.* 1805. *S. Meyeriana* Borr. in *Hook. Brit. Fl.* ed. 3. (not *Willd.*?).

Banks of rivers and watery places; most frequent in the north. *h.* 5, 6. — In its wild state it is a bushy shrub, rarely above 6—8 feet high; but when cultivated and protected from injury, it becomes a tree 18—20 feet high. Its large and copious shining foliage almost gives this plant the appearance of an evergreen. *Sterile catkins* fragrant, as well as the *leaves*. In the wild plant the *leaves*, at the time of flowering, rarely exceed $\frac{3}{4}$ of an inch in breadth, while they vary in length in specimens from the same marsh, from scarcely $2\frac{1}{2}$, when they are almost elliptical or ovate, to 3 inches, when they are oblong or elliptical-lanceolate and much acuminate: in the cultivated tree they are usually much broader and larger; the sterile catkins too are much larger and more handsome than in the wild one: the stipules are said to be ovate oblong, straight and equal-sided; but if we are not confusing specimens of the next, they are sometimes oblique and half-cordate, sometimes reniform on the autumnal shoots.

8. *S. *cuspidáta* Schultz (*cuspidate W.*); leaves oblong-lanceolate much acuminate, "stipules half-cordate oblique, stamens 3—4," style short, stigmas bifid, stalk of the ovary 3—4 times as long as the gland. *S. Meyeriana* Willd.

Near Shrewsbury: *Leighton*. *h.* 6. — Of this we have not seen perfect specimens: the foliage is scarcely different from what we have observed in the last; but there appears to be a difference in the length of the stalk of the ovary, if this be constant.

iv. *Stamens 2, distinct. Capsules sessile, ovato-conical, glabrous. Style elongated, bifid; stigmas oblong or linear-oblong. Catkins lateral, sessile, minutely bracteate, appearing before the leaves. Leaves lanceolate, acute, adult ones glabrous. Branches with a glaucous bloom, especially when dried. Pruinosa* Borr.

9. *S. *acutifolia* Willd. (*violet W.*); young shoots glabrous, leaves linear-lanceolate elongate acuminate serrulate glabrous somewhat glaucous underneath, stipules lanceolate acuminate.

Cleveland, and Wensleydale Dale, Yorkshire. *h.* 4. — The sterile plant has alone been met with in this country, and this is a sufficient argument against its being a truly native species. We believe it is commonly cultivated for its beautifully coloured branches. It is certainly the *S. violacea* of the *Sal. Wob.*

v. *Stamens* 2, *distinct*. *Capsules* elongated, *glabrous*. *Catkins* very lax, appearing with the leaves on short lateral leafy shoots; their scales deciduous. *Leaves* lanceolate, serrate, with stipules. *Petioles* scarcely glandular. *Fragiles* and *Albæ* *Borr.*

10. *S. frágilis* L. (*crack-W.*); leaves glabrous or downy beneath when young, stipules half-cordate, capsules more or less stalked, style conspicuous, stigmas bifid. — *α.* leaves ovato-lanceolate (glabrous or downy beneath), floral ones similar, ovary oblong-ovate scarcely longer than the scales, style shorter than the stigmas. *E. B. t.* 1807. — *β.* leaves lanceolate tapering at both ends (downy beneath when young), floral ones similar, ovary lanceolate-acuminate nearly twice as long as the scale, style the length of the stigmas. *S. Russelliana* *Sm.*: *E. B. t.* 1808 (*Bedford W.*). — *γ.* leaves lanceolate (quite glabrous), floral ones often obovate bluntish and recurved, “ovary tapering, style longer than the stigmas.” *S. decipiens* *Hoffm.*: *E. B. t.* 1937 (*white Welsh or varnished W.*).

Marshy woods and osier-grounds, in many places. *h.* 4, 5. — Young branches brittle, especially in the *var. α.*; but in *β.* they are in some situations equally so. *Var. β.* is an extremely valuable tree, and was first brought into notice by his Grace the late Duke of Bedford. As to *var. γ.*, its “bark is polished like porcelain: the buds are black in spring: young shoots often crimson, the colour extending occasionally to the midrib of the leaves.” (*Leefe.*) The leaves of *var. γ.* are quite glabrous, pale and much reticulate beneath; of *var. α.* often broad at the base, glabrous or slightly downy beneath when young; and of *var. β.* narrower than the last and more downy beneath. *Var. β.* and *γ.* seem to occur nowhere in a wild state: of the former the fertile, and of the latter the sterile, plants alone are, we believe, known, at least in this country.

11. *S. álba* L. (*common white W.*); leaves elliptical-lanceolate regularly glanduloso-serrate acute when young more or less silky beneath often so above, capsules ovate-acuminate nearly sessile glabrous, stigmas nearly sessile short recurved bifid, scales short pubescent at the margin much shorter than the stamens and about the length of the capsule. — *α.* young leaves silky on both sides. *E. B. t.* 2430. — *β.* under-side of the leaves less silky ultimately quite glabrous and glaucous. *S. cærulea* *Sm.*: *E. B. t.* 2431 (*blue W.*).

River-sides, moist woods, &c. *h.* 5. — A well known tree of considerable size, and of which the *var. β.* is of such exceedingly rapid growth, that it is by many still deemed a distinct species; and Mr. Forbes observes that the new leaves, after the wood has been cut, are of a larger size, and, as well as the twigs, of a darker hue than the real *S. álba*. They seem to be alike valuable for their bark and their timber, and are both amply deserving of cultivation.

12. *S. vitellína* L. (*yellow W., or golden O.*); leaves lancco-

late with glandular serratures acuminate more or less silky beneath often so above, capsules lanceolate sessile glabrous, style short, stigmas bipartite, scales lanceolate pointed longer than either stamens or style. *E. B.* t. 1389.

Hedges and osier-grounds, in many places. *h.* 5.—This is rendered striking by the bright yellow colour of its branches, and the leaves often partake of the same tint. With this exception, the plant, as Mr. Borrer observes, is “*extremely* nearly allied to *S. alba*.” Mr. Leeke, and many others, conjoin them; and our only doubt arises from the long scales of the catkin imparting quite a peculiar aspect, a character, however, which Mr. Borrer does not notice, and none of the others are of much value.

[vi. *Stamens* 2, *distinct*. *Capsules* on long stalks, *silky*. *Catkins* short, *lax*, appearing before the leaves on short lateral stalks with sometimes a few leafy bracteas at their base; their scales dark at the point, short, persistent. *Leaves* lanceolate, serrate, *silky* when young, with small stipules. *Griseæ* Borr.

13. *S. * petioláris* Sm. (*dark long-leaved* W.); leaves when young gray with long silky hairs especially beneath, capsules ovato-lanceolate, stigmas ovate nearly sessile, scales villous (black) scarcely longer than the pedicel. *E. B.* t. 1147.

Scotland: *Dickson*. *h.* 4.—Not uncommon in North America, and certainly not a European species. It is not now (even in cultivation) in Possil-marsh, where it was said to have been found by G. Don. A species very distinct from any of the preceding, nearly allied to *S. grisea* Willd., if not the same.]

vii. *Stamens* 2, *distinct* (or sometimes combined at the base?). *Capsules* distinctly stalked, *silky*. *Style* short. *Catkins* sessile, short and rather dense, bracteated at the base; scales discoloured at the end. *Leaves* small or narrow, or with a satiny pubescence. *Small, erect, or procumbent shrubs*. *Argentææ* Koch (*Rosmarinifoliæ*, *Fuscæ*, and *Ambiguæ* Borr.).¹

14. *S. * rosmarinifolia* L. (*Rosemary-leaved* W.); erect slender, leaves linear-lanceolate with a straight point silky (the young ones especially) quite entire or with a few very minute glandular teeth, catkins at first shortly ovate or oblong afterwards more lax, ovaries stalked silky oblong-lanceolate acuminate, style about as long as the linear divided or entire stigmas, scales short villous. *E. B.* t. 1365.

¹ We have conjoined Mr. Borrer's three groups. Between some forms of *S. fusca* with the upper side of the leaves downy or silky and *S. ambigua* there is absolutely no difference, except that the leaves of the former then exhibit less evident serratures, a more prominent venation above, and have the point of the leaves conspicuously bent back to one side. *S. fusca* and *S. ambigua* have broad leaves; the first has them usually glabrous above, and there, when dried, prominently reticulate and often black; the latter always of an ashy colour. *S. rosmarinifolia* has narrow silky leaves with linear stigmas; *S. angustifolia* narrow leaves, broad erect stigmas, and lax short catkins; *S. Doniana* usually narrow leaves and dense catkins. Mr. Bentham seems disposed to unite all the species of this section into one.

Found by *Sherard*. Sent by *Mr. Dickson* to *Mr. Crowe* (*Sm.*)
h. 4.—A slender, upright *shrub*, 2—3 feet high, with silky *leaves*, nearly glabrous in the adult plant. Whole plant, when dry, often turning almost black, as does the following. *Mr. Leefe* observes that *S. rosmarinifolia* L. et Koch differs in the fertile catkins being almost round and very short, buried in the floral leaves, and not curved as in *E. Bot.*: we find them to vary much in these respects.

15. *S.* angustifolia* Wulf.? (*little Tree W.*); erect slender, leaves linear-lanceolate nearly glabrous with minute glandular teeth the young ones silky glaucous beneath, catkins ovate erect, ovaries ovate-aeminate silky stalked, style about as long as the broad erect entire stigmas, scales very villous nearly as long as the young ovaries afterwards often as short as the stalk to the capsule. *S. Arbuseula Sm.*: *E. B. t.* 1366 (not of *continental authors*).

Scotland. Clova mountains. Near Dumfries. *h.* 4.—We have never seen wild specimens from this country, nor has *Mr. Borrer*. The large broad leaves represented in *E. Bot.* cannot belong to this species. *Sir J. E. Smith* in the *E. Fl.* places this and the last widely apart; they are certainly so closely allied that the difference lies almost entirely in their ovaries, which are broader at the base in the present plant, with ovate and quite entire stigmas, and more shaggy scales.

16. *S. Doniána* Sm. (*Don's W.*); branches at first procumbent then erect and twiggy, leaves partly opposite oblong-lanceolate broadest above the middle acute slightly serrate even livid and somewhat silky beneath, stipules linear, catkins erect cylindrical compact, ovaries stalked silky longer than the obovate seale, stigmas short emarginate. *E. B. S. t.* 2599.

Scotland. *h.* 5.—*Shrub* 6 feet or more high, resembling *S. purpurea*, but *Mr. Borrer* considers it correctly placed in the present division, on account of its stalked ovaries, which have little resemblance to those of the *Monandræ*, but are closely analogous to those of *S. fusca*, to which species he thinks there is considerable affinity in the foliage also. We believe that the plant with *sterile flowers* is unknown. *Mr. Babington* and *Mr. Leefe*, indeed, mention that the stamens are said (on the authority of Koch) to be monadelphous, and the anthers ultimately yellowish-brown, not black; but perhaps one of the *Monandræ* has been mistaken for it.

17. *S. fusca* L. (*dwarf silky W.*); leaves elliptical or elliptic-lanceolate or linear-lanceolate broadest about the middle acute entire or with minute glandular serratures somewhat downy glaucous and generally very silky beneath, ovaries upon a long stalk lanceolate very silky, stigmas bifid. *S. repens Hook. Scot.* 1. p. 284. — *a.* stem much branched upright decumbent below, leaves elliptical-lanceolate with a straight point. *S. fusca Sm.*: *E. B. t.* 1960. — *β.* stem depressed with short upright branches, leaves elliptical-lanceolate with a straight point.

S. repens L.: *E. B.* t. 183 (*with young leaves only*).— γ . stem prostrate with elongated straight branches, leaves elliptic-oblong with a curved point. *S. prostrata* Sm.: *E. B.* t. 1959.— δ . stem recumbent, leaves elliptical. *S. fœtida* Sm. *E. Fl.* vol. iv. p. 208. *S. ascendens* Sm.: *E. B.* t. 1962. *subvar.* leaves smaller. *S. fœtida* β . Sm. *E. Fl.* vol. iv. p. 208. *S. parvifolia* Sm.: *E. B.* t. 1951.: *Salict. Wob.* p. 161. t. 81.— ϵ . stem procumbent or erect, leaves elliptic-lanceolate with a recurved point. *S. incubacea* L.: *E. B. S.* t. 2600 (soon glabrous above).—*subvar.* leaves long, covered with dense gray pubescence above, and sometimes narrow.— ζ . stem erect or spreading leaves elliptical, with a recurved point very silvery beneath usually long, covered with gray pubescence above. *S. argentea* Sm.: *E. B.* t. 1364.

Moist and dry heaths, moors, and sandy situations. *h.* 4, 5.— Usually a small *shrub*, with rather long straight *branches*, but varying exceedingly, according to situation and other circumstances; as do the *leaves*, which are more or less glabrous above in the first four varieties, while in the last two they are often^c downy above for a much longer period, and do not acquire by drying the dark colour of the others: all are more or less silky beneath where the nerves are prominent, and prominently reticulate above.

18. *S. ambigua* Ehrh. (*ambiguous* W.); “leaves oval obovate or lanceolate pubescent slightly toothed with a recurved point somewhat rugose above glaucous with prominent veins beneath, catkins stalked erect cylindrical, ovaries stalked densely silky, style very short, stigmas short at length cloven.” *Borr.* in *E. B. S.* t. 2733.— α . leaves oval or obovate moderately hairy. *S. ambigua* Ehrh. (not of Pursh). *S. versifolia* Ser.— β . leaves obovate very silky on both sides.— γ . leaves obovate lanceolate or oblong moderately hairy or silky. *S. spathulata* Willd.

α . Gravelly heaths. Sussex, Essex, Suffolk. Perthshire, Aberdeen, Inverness, Angus, Caithness, Orkney, and the Hebrides.— β . Bogs near Forfar.— γ . Epping Forest; Hopton, Suffolk. Between Balnagard and Aberfeldie, Scotland. *h.* 5 — A straggling shrub, with branches sometimes procumbent, sometimes rising a foot or two from the ground; at other times it is of an upright growth, 3—4 feet high. Young *twigs* downy. *Leaves* thin, somewhat rugose, with veins sunken above and prominent beneath; upper side variable as to pubescence and silkiness; under sometimes quite bare and glaucous, but usually with copious adpressed silky or cottony hairs; edges more or less recurved. “*S. ambigua* approaches on the one side to *S. aurita*, with the smallest varieties of which it is most likely to be confounded, and on the other to *S. fusca*.” (*Borr.*) Koch regards it as a hybrid between the two. They are altogether extremely *ambiguous* plants. The *var. beta*. has a very peculiar aspect: we have never seen any specimens, except those from Mr. Drummond, and what we ourselves collected in Restennet Moss near Forfar.

viii. *Stamens* 2, *distinct*. *Capsules* crowded, sessile, oblong-ovate, downy. *Stigmas* ovate, almost sessile. *Catkins* cylindrical, terminal, stalked, appearing with the full-grown leaves. *Scales* pale brown. *Leaves* roundish, extremely reticulate beneath. *Dwarf alpine shrubs*, with the stem creeping below the surface of the ground. *Reticulata* Borr.

19. *S. reticulata* L. (*reticulate* W.); leaves nearly glabrous above, glaucous beneath. *E. B. t.* 1908.

Lofty mountains of the middle and north of Scotland. *h.* 6, 7. — A species said to have been found in England and Wales, but not on good authority. Stem short, very woody, much branched, procumbent, when cultivated forming a beautiful tuft of considerable extent, with its curiously reticulate and large handsome leaves white or glaucous on their under side. The catkins and stems have a reddish or purplish tinge.

ix. *Stamens* 2, *distinct*. *Capsules* sessile, ovate, very downy or silky. *Catkins* somewhat compact, lateral, appearing with the leaves; their scales discoloured at the end. *Leaves* between roundish-ovate and oblong-lanceolate, soft, hairy and silky, often white and cottony beneath. *Small erect shrubs*. *Glaucæ* Borr.

20. *S. arenaria* L. (*downy Mountain* W.); leaves cottony and sometimes also silky beneath, catkins usually naked at the base rarely on lateral leafy shoots, style at length elongated bifid at the apex with bipartite stigmas.—*a.* leaves with gray or whitish wool or down on the upper side, which sometimes falls off through age leaving the dull surface of the leaf, styles always elongated, catkins leafless. *E. B. t.* 1809. *S. Stuartiana* Sm.: *E. B. t.* 2586. *S. limosa* Wahl.—*β**. leaves elliptic-lanceolate, very soon quite glabrous and shining above, styles usually short at first lengthening as the fruit ripens, catkins leafless (or rarely on lateral leafy shoots. *S. glauca* Sm.: *E. B. t.* 1810.

a. Highland mountains, especially those of Breadalbane and Clova. *h.* 6, 7. — It is almost impossible to refer the Linnæan synonyms to these plants, without some objections being started. Our var. *a.* is certainly the *S. arenaria* L.; but that name was given in consequence of Linnæus confusing with it *S. fusca* var. *ζ.*, which alone merited it. The *S. arenaria* Sm. appears to be the *S. Lapponum* L., as to the synonym of the *Flor. Lapponica* (where he says *folia subtus crassissimo vellere albo tecta*) and perhaps of the first edition of the *Flor. Suecica*, but not that of the second, where *S. sericea* Vill. is described; and this last, according to Smith, is the *S. Lapponum* of the Linnæan herbarium; again, *S. Stuartiana* Sm. seems to be the state of *S. arenaria*, of which a leaf is figured in the *Flor. Lapponica*. The variety *a.* varies much in the foliage: we have collected specimens in the Clova mountains with some leaves roundish-obovate and slightly cordate, and others elliptic-oblong: this we suspect to be the *S. lanata* of G. Don, both sides of the leaves being more white and woolly than usual. *S. arenaria* Sm. is said to have the leaves ovate, acute, and only

slightly downy above, while in *S. Stuartiana* they are sometimes narrow oblong-lanceolate and very shaggy above; but these are extremes; and there is a complete transition in the form and pubescence. For our *var. β.* we give no stations, because we have no reason to believe it indigenous, Mr. Don's specimens now before us from the Clova mountains being the same as *var. α.*, and belonging to *S. arenaria* E. Bot.; it is commonly cultivated, being a handsome plant, and is common in Switzerland, where we believe our *var. α.* does not occur.

- x. *Stamens* 2, *distinct*. *Capsules* shortly stalked, or almost sessile, somewhat lanceolate, hairy or silky. *Style* conspicuous. *Catkins* lateral, nearly sessile, appearing with the leaves, with leaf-like bractes at the base; their scales discoloured at the end. *Trees* of a more or less considerable size with long pliant branches. *Leaves* lanceolate. *Viminalis* Borr.¹

* *Stigmas* long, linear, and slender.

21. *S. viminalis* L. (*common O.*); leaves linear or linear-lanceolate obscurely crenate white and silky beneath, stipules very small sublanceolate, ovaries almost sessile. *E. B.* t. 1898.

Wet places, osier-grounds &c., frequent. *h.* 4, 5.—*Branches* straight and twiggy. This is held in great esteem for basket-work.

22. *S. stipularis* Sm. (*auricled O.*); leaves lanceolate very indistinctly crenate white and downy beneath, stipules large semicordate acute often with a tooth or lobe at the base, ovaries nearly sessile. *E. B.* t. 1214.

Osier-grounds, hedges, and woods, near Bury St. Edmund's. *h.* 3—5.—Allied to the preceding in fructification; differing in its large and coarser leaves, less white beneath, and with large *stipules* on the autumnal shoots.

23. *S. Smithiana* Willd. (*silky-leaved O.*); leaves lanceolate obscurely crenate white and satiny beneath, stipules very small narrow acute, ovaries distinctly stalked. *S. mollissima* *E. B.* t. 1509.

Meadows and osier-grounds. About Bury; Glamorganshire; near Warrington. Scotland. *h.* 4, 5.—We place no dependence on the size of the *stipules* in this and the two preceding (which are perhaps forms of the same species), and besides they are not available to a student. The only other character between the present species and *S. stipularis* consists in the almost sessile or distinctly stalked ovary, and we should therefore have conjoined them, did not Mr. Leefe consider that of sufficient importance to remove *S. Smithiana* to a separate section, while he refers *S. stipularis* as a variety to *S. viminalis*. Mr. Bentham unites the three.

¹ We can scarcely point out any certain character by which to distinguish the second subdivision of this section from the *Cinereæ*: in all those which we have examined, the catkins of the present group appear along with the leaves, the capsule is on a shorter stalk, and the stigmas are never sessile.

** *Stigmas thick, oblong, or linear-oblong. Ovary distinctly stalked; the stalk scarcely twice as long as the nectary.*

24. *S. *acuminata* Sm. (*long-leaved S.*); leaves lanceolate-oblong pointed wavy finely toothed glaucous and downy beneath, stipules half-ovate, stigmas oblong or oblong-linear. *E. B. t.* 1434.

Rather moist woods and hedges, frequent. *h.* 4, 5.—A small tree, seldom above 20 feet. Not to be distinguished from the two last when in flower, except by the shorter stigmas. Mr. Borrer observes that it is the *S. lanceolata* of Seringe: in that species, however, the stigmas appear to be constantly cloven, in ours constantly entire.

25. *S. ferruginea* And. (*ferruginous S.*); leaves lanceolate with wavy crenatures and small teeth minutely hairy on both sides paler beneath, stipules small half-ovate, stigmas oblong. *E. B. S. t.* 2665.

Near Carlisle; Kirkby-Lonsdale; banks of the Thames; Nut-hurst, Sussex. Fifeshire. *h.* 4, 5.—According to Mr. Forbes, a shrub 12—14 feet high. *Leaves less hairy than the last.*

xi. *Stamens 2, distinct. Capsules lanceolate acuminate, silky, tomentose, conspicuously stalked; stalks three (or more) times longer than the nectary. Style none or much shorter than the ovate or oblong thick stigmas. Catkins sessile, lateral, at first short, afterwards more lax, appearing before the leaves; their scales discoloured at the end. Leaves more or less wrinkled and stipuled, very veiny beneath: stipules without glands on the inside. Trees or low shrubs. Cinereæ Borr.*¹

26. *S. holosericea* Willd.? (*soft shaggy-flowered W.*); "leaves lanceolate acuminate serrate glabrous above pale downy and strongly veined beneath, catkins cylindrical, ovaries stalked densely clothed with silky wool, stigmas ovate sessile, scales (black) very shaggy." *Borr.*

About Lewes, Sussex. *h.* 4, 5.—This Mr. Borrer received from Sir J. E. Smith, marked *S. acuminata* var. *rugosa*, but from which he considered it must be separated by its sessile pale-coloured stigmas and leaves more green and rugose above and more strongly veined beneath; and if the character from the stigmas be correct, it ought to be removed from the *Viminales* to the present section; our specimens from Mr. Borrer are, however, destitute of flowers and fruit. Mr. Babington, considering it distinct from Willdenow's plant, adopted the name of *S. rugosa* in the 1st and 2nd editions of his Manual; in the 3rd and 4th he has united it, and also *S. ferruginea*, to *S. Smithiana*.

27. *S. cinerea* L. (*gray Sallow*); leaves obovate obovato-ellip-

¹ Mr. Bentham unites *S. holosericea*, *cinerea*, and *Caprea* under the latter name, but distinguishes *S. aurita* thus: *S. Caprea*, sterile catkins oblong very silky, capsules 3-4 lines long, leaves ovate or oblong. *S. aurita*, sterile catkins cylindrical rather silky, capsules 2-3 lines long, leaves mostly obovate.

tical or obovato-lanceolate, autumnal ones pointed even serrate reticulated with prominent veins nearly glabrous and glaucous beneath with the margins somewhat recurved, stipules rounded toothed upper ones often half-cordate, style very short or none. *E. B. t.* 1897 (autumnal leaves narrow rigid and their margins recurved). *S. aquatica Sm. : E. B. t.* 1437 (autumnal leaves broader larger more pliant nearly flat). *S. oleifolia Sm. : E. B. t.* 1402 (autumnal leaves narrower rigid nearly flat).

Banks of rivers, wet hedge-rows, moist woods, and swampy places, abundant. *h.* 3, 4.—Often only a *shrub*, with an erect stem and erect or spreading branches, but when protected it becomes a *tree* 20—30 feet high, with hanging branches. It is of no beauty and little use. In specimens of "*S. cinerea*," named by Sir J. E. Smith himself, the lower stipules are as reniform as in the two other supposed species, which we cannot distinguish as well marked varieties.

28. *S. aurita L. (round-eared S.)*; leaves obovate repandodentate wrinkled with veins more or less pubescent very downy beneath tipped with a small bent point recurved at the margin, stipules roundish, style very short. *E. B. t.* 1487.

Moist woods and thickets, abundant. *h.* 4, 5.—A tall shrub or small bushy *tree*, with straggling branches. "One of the least equivocal species, although its leaves vary in length and roundness: they are usually much wrinkled and vaulted, the stipules large and stalked." *Borrer*.

29. *S. Cúprea L. (great round-leaved S.)*; leaves roundish-obovate or ovato-elliptical even acute, at first entire downy above tomentose beneath, autumnal ones serrate and waved at the margin nearly glabrous above downy beneath, stipules somewhat reniform toothed, style very short or none. *E. B. t.* 1488. *S. sphacelata Sm. : E. B. t.* 2333.

Woods and dry pastures, common. *h.* 4, 5.—A small *tree*, distinguished by being in spring loaded with handsome yellow blossoms before any of its leaves appear. The catkins of both kinds are broader and shorter than in most of the species with crowded flowers. Various species of *Salix* have occasionally their leaves sphacelate or discoloured at the point; and such varieties may sometimes be propagated by cuttings; the one called *S. sphacelata* by Smith seems to be that state of the present species, and is probably not unfrequent.

xii. *Stamens 2, usually distinct. Capsules conspicuously stalked, conical-subulate. Style elongated, bifid. Stigmas short. Catkins lateral, sessile, or on short bracteate but not leafy stalks; the scales discoloured at the end. Leaves crenato-dentate or serrate, between roundish-obovate and lanceolate, stipules when conspicuous with glands on their inside at the base. Shrubs or small trees. Phyllicifoliæ (Nigricantes and Bicolores Borr.)*¹

30. *S. nigricans Sm. (dark-leaved S.)*; young shoots densely

¹ Mr. Bentham unites all the species of this group under the name of *S. phyllicifolia*.

pubescent or hairy towards the summit, leaves usually dull more or less glaucous beneath turning black by drying (especially the young ones).—*a.* ovaries and stalks silky, stems erect. *S. cotinifolia* Sm.: *E. B. t.* 1403 (leaves elliptical-orbicular and often cordate at the base). *S. nigricans* *E. B. t.* 1213 (leaves elliptic-lanceolate). *S. Forsteriana* Sm.: *E. B. t.* 2344 (leaves elliptic-obovate acute).—*β.* ovaries glabrous at the base where covered by the scale, stalk hairy, stems erect (leaves elliptical acute $1\frac{1}{2}$ —2 inches long). *S. propinqua* Borr.: *E. B. S. t.* 2729.—*γ.* ovaries silky or glabrous at the base where covered by the scale, stalk hairy, stems trailing (leaves elliptic-obovate). *S. rupestris* Donn: *E. B. t.* 2342.—*δ.* ovaries glabrous, stems erect. *S. hirta* Sm.: *E. B. t.* 1404 (leaves elliptic or elliptic-oblong, branches densely hairy, capsule not wrinkled, its stalk very hairy). *S. Andersoniana* Sm.: *E. B. t.* 2343 (leaves elliptic oblong, branches minutely downy, capsule not wrinkled, its stalk very hairy or quite glabrous). *S. Damascena* Forb.: *E. B. S. t.* 2709 (leaves ovate or rhomboidal, capsule not wrinkled, stalk hairy or glabrous). *S. petræa* And.: *E. B. t.* 2725 (leaves oblong, capsule wrinkled towards the point, stalk hairy).

Fens, osier-grounds, sides of streams, and on the mountains, principally in the north of England and Scotland. *h.* 4—6.—A most variable species; but in this country, whether cultivated or wild, the foliage constantly turns black when pressed and dried, however carefully this be done. We must allow, however, that Swiss specimens do not exhibit this character so decidedly, and hence M. Seringe conjoins it with *S. phylicifolia*, and indeed there is scarcely any other difference between them. Between the forms represented and described in *E. Bot.* and the *Supplement*, and the *Eng. Flora*, are innumerable intermediate ones; so that if they be good species, we must increase their number without end.

31. *S. laurina* Sm. (*intermediate* W.); young shoots and leaves densely pubescent or hairy towards the summit, leaves at length glabrous glaucous beneath dull green above after being dried (except the young ones which sometimes become slightly black).—*a.* stalk of ovary hairy. *S. tenuior* Borr.: *E. B. S. t.* 2650 (leaves narrow obovato-lanceolate $2\frac{1}{2}$ —3 inches long, ovary silky, style longer than the stigmas). *S. laurina* Sm. *S. bicolor* Sm.: *E. B. t.* 1806 (leaves elliptic-oblong acute $2\frac{1}{2}$ —4 inches long, ovary silky as long as the stigmas).—*β.* ovary and stalk quite glabrous. *S. tenuifolia* Sm.: *E. B. S. t.* 2795 (leaves elliptical acute or pointed more serrate about $2\frac{1}{2}$ inches long).

Woods, thickets, and river-banks, principally in England. *h.* 4, 5.—This species has the thinner and duller foliage of the last; but the leaves, except the upper ones on a shoot, do not turn black in

drying; thus it appears to be intermediate between *S. nigricans* and *S. phylicifolia*, and to unite the two. The form called *S. laurina* by Smith (or *S. bicolor* E. B.) has the leaves considerably larger than the others, and it often becomes a small tree; it thus is in some measure allied with *S. Caprea*; the style likewise is shorter than we usually find in this group, the stigmas are often bipartite, and the scales frequently as long as or longer than the stalk of the ovary, contrary to the description usually given. Of our *var. β*. we have only seen the leaves.

32. *S. phylicifolia* L. (*Tea-leaved W.*); branches twiggy, shoots and leaves soon quite glabrous, leaves dark green rigid shining above and glaucous beneath not becoming black by drying, stigmas entire or bipartite before dividing oblong or ovate (rarely linear?).—*α*. ovaries and stalk silky or hairy. *S. radicans* Sm. *S. phylicifolia* E. B. t. 1958 (leaves obovate or elliptic-lanceolate, style elongate). *S. Davalliana* Sm.: E. B. S. t. 2701 (leaves obovato-lanceolate pointed, style as long as the stigmas). *S. Weigeliana* Willd.: E. B. S. t. 2656 (leaves broadly elliptical rhomboidal or almost round with a short point, style longer than the stigmas). *S. amœna* Borr. *S. nitens* Ander.: Borr. in E. B. S. t. 2655 (leaves ovate or elliptical acute or pointed, style longer than the stigmas). *S. Croweana* Sm.: E. B. t. 1146 (leaves elliptic-obovate scarcely acute, stamens united at the base, style about as long as the stigmas). *S. Dicksoniana* Sm.: E. B. t. 1390 (leaves elliptic or elliptic-obovate with a point, style about as long as the stigmas).—*β*. ovaries glabrous below silky towards the point. *S. laxiflora* Borr.: E. B. S. t. 2749 (leaves broadly obovate narrowed at the base, stigmas linear divided?). *S. tetrapla* Walk.: E. B. S. t. 2702 (leaves elliptic oblong pointed). *S. Weigeliana* var. Borr. sub E. B. S. t. 2656 (leaves elliptical rhomboidal or almost round with a short point).—*γ*. ovaries entirely glabrous. *S. Borreriana* Sm.: E. B. S. t. 2619 (leaves broadly or elliptical-lanceolate, stalk of ovary hairy, style elongate). *S. phillyreifolia* Borr.: E. B. S. t. 2660 (leaves elliptic-lanceolate acute at each end, stalk of ovary glabrous, style as long as the stigmas).

Principally in valleys in mountainous districts; rarely in the low parts. *h.* 4, 5.—*Twiggy bushes*. We can find no good characters to distinguish the above numerous supposed species; and notwithstanding we have been supplied with cultivated specimens by Mr. Borrer in illustration of the figures in *E. Bot.* and the *Supp.*, we cannot refer our wild ones (and those we have ourselves obtained from gardens) with certainty to any of them, so variable is the foliage on the same bush. The figure of *S. Dicksoniana* in *E. B.* is taken apparently from a specimen in which the catkins are very young; they afterwards elongate, but are scarcely ever more than $1\frac{1}{2}$ times their breadth when the capsules are mature; it is a smaller shrub than usual in this species, and in that respect more like the next group:

its stigmas are at length bifid. *S. bicolor* Ehrh. (*S. tenuifolia* E. B. t. 2186, figure only, and *S. floribunda* Sal. Wob. t. 54) appears to belong to this species, but the fertile plant alone is known with certainty.

xiii. *Stamens* 2, distinct. *Anthers* yellow or brown when empty. *Ovaries* oblong or ovate, densely pubescent, nearly sessile; stalk when present much shorter than the nectary. *Style* as long as the ovate emarginate or cloven obtuse stigmas. *Catkins* appearing along with the leaves, terminal on short few-leaved lateral shoots, at first very compact; scales of a uniform yellowish-brown colour when dried, half as long as the ovary, hairy. *Leaves* more or less veiny above; stipules none or minute. *Small erect or diffuse rarely prostrate shrubs*: stems above ground. *Vacciniifoliæ* Borr.

33. *S. Arbuscula* L.: Wahl. (*small Tree W.*); leaves lanceolate-ovate or ovate finely serrate. *S. Myrsinites* Lightf.—*α*. leaves opaque above glaucous beneath. *S. vacciniifolia* Walk.: E. B. t. 2341 (leaves flat smaller narrower and less prominently veined above). *S. venulosa* Sm.: E. B. t. 1362. (leaves flat narrow-ovate very much veined above). *S. carinata* Sm.: E. B. t. 1363 (leaves ovate folded so as to form a keel). *S. prunifolia* Sm.: E. B. t. 1361 (leaves broadly ovate flat).—*β*. leaves (broadly or roundish ovate prominently veined above) green but scarcely shining on both sides.

α. Highland mountains, not unfrequent. — *β*. Ben Lawers. *h*. 6, 7. — “Twigs of the fertile plant red, of the sterile dull green.” *Lightf.* All these are, we believe, decumbent shrubs on their native mountains, but when cultivated, they become more erect and about 2 feet high. As a species this is closely allied to *S. prostrata* Ehrh., which however has narrow entire leaves. We cannot satisfactorily distinguish Smith’s four species. Our *var. β*. we never met with but once, and long hesitated whether to refer it to the present or to the next group: it is indeed precisely intermediate, and may perhaps be a hybrid between some of the forms of *S. Arbuscula* and *S. Myrsinites*: the leaves are not glaucous beneath, and the catkins are shorter and more lax than in this group; but the ovaries are almost sessile, and the colour of the scales and the numerous lateral flower-shoots indicate its greater affinity to *S. Arbuscula*: in some respects it is very closely allied to *S. ovata* Ser., but wants the silky hairs so abundant on the young leaves of that species. Mr. Bentham remarks of the above that they appear to him “to be either varieties of *S. Myrsinites* of rather larger growth with short peduncles to the catkins, and the leaves rather glaucous beneath; or perhaps in some instances small-leaved varieties of *S. phylicifolia*.” If Mr. Bentham be correct, he ought to have united all of these, for the characters of *S. arbuscula* are partly those of the one, partly those of the other.

xiv. *Stamens* 2, distinct. *Anthers* yellow or brown when empty. *Ovaries* lanceolate, silky, stalked; stalks usually as long as, or at length longer than, the gland. *Style* more or less deeply bifid, as long as the cloven

obtuse stigmas or longer. Catkins appearing with the full-grown leaves, terminal on lateral or terminal leafy shoots, soon becoming lax; scales blackish when dried, hairy and shining above, much shorter than the ovary. Leaves veiny, never glaucous beneath; stipules ovate or lanceolate, conspicuous on the autumnal shoots. Small, much branched shrubs; stems above ground. *Myrsinites* Borr.

34. *S. Myrsinutes* L. (green Whortle-leaved W.); leaves waved serrate with very prominent veins often hairy at length shining blackish when dried, (catkins short, style cloven to the middle, longer than the stigmas?). — *a.* leaves roundish or elliptical or obovate. *E. B.* t. 1360. — *β.* leaves (smaller) somewhat cordate at the base. — *γ.* leaves (smaller than *a.*) ovate or oblong rather acute. *S. arbutifolia* Sm. *S. Myrsinites* Linn. *Lapp.* t. 7. f. 6. t. 8. f. f.: *Fl. Dan.* t. 1054. — *δ?* leaves lanceolate.

Highland mountains, but rare. — *a.* Craig-challeach; Braigh-riach; Clova mountains. — *β.* Clova mountains (July, 1824). — *γ.* Craig-challeach. — *δ.* Clova mountains. *h.* 6. — We do not find catkins on any of our Scotch specimens, and therefore cannot be quite certain that this portion of the above character applies to them. The figure in *E. B.* is from cultivated specimens; Dr. Stuart's plant from Glencoe, referred to there, belongs to *S. procumbens*; while Mr. Dickson's was probably the same as our own, and from the Breadalbane mountains. Of our *var. δ.* we have only seen a single specimen; some of its leaves are $1\frac{1}{2}$ inch long and only $1\frac{1}{2}$ inch broad; they are hairy, but shining when the hairs are rubbed off.

35. *S. procumbens* Forbes (smooth-leaved alpine W.); leaves oval (rarely acute) obscurely serrate shining quite glabrous not black when dried, catkins elongate, style cloven to the middle (or below it) as long as the stigmas. *Sal. Wob.* t. 61: *E. B. S.* t. 2753. *S. retusa*¹ With. *Bot. Arr.* t. 31. *S. lævis* Brit. *Fl.* ed. 1, p. 432.

Highlands of Scotland. Glencoe. Breadalbane mountains, 1801. *h.* 6. — A low procumbent shrub, bearing a considerable resemblance to the last, but distinct, if our description of its catkins applies to British specimens. It was originally communicated to Withering "by Mr. Griffith, to whom Mr. Townson sent roots from Scotland under the name of *retusa*," and first noticed in one of the early editions of his work: it is also inserted in Hull's *Brit. Flora* in 1799. Mr. Winch found it in 1801, but he retained no notes of the precise locality, and it has not been rediscovered. Where Dr. Stuart met with it in Glencoe we do not know. The catkins are in maturity

¹ *S. retusa* L. is a prostrate glabrous shrub, with veiny obovate-elliptical or cuneate-oblong not glaucous leaves, glabrous ovate shortly stalked ovaries, the stalks longer or shorter than the nectary in the same catkin, and catkins usually few-flowered and similar to those of *S. herbacea*. Fries states that beautiful specimens of the *var. serpyllifolia*, collected by Mr. Winch in Breadalbane, are preserved in Hornemann's herbarium. This must be a mistake: Mr. Winch's *S. retusa* is that of Withering or *S. procumbens* Forbes, and is widely different from the true one, which is not, we believe, a northern species, and is considerably unlike any either of the present or last group.

three or four times as long as those of *S. Myrsinites*; the leaves are flatter, less serrate at the margin, and of a yellowish-brown colour when dried. Mr. Bentham, however, unites the two.

xv. *Stamens 2, distinct. Anthers yellow or brown when empty. Ovaries ovate-lanceolate, shortly stalked; stalk mostly shorter than the gland. Style bifid, as long as the obtuse bifid stigmas. Catkins appearing with the full-grown leaves, terminal, few-flowered; scales brownish, glabrous. Leaves roundish, serrate, with elevated veins, glabrous, not glaucous. Dwarf alpine prostrate shrubs, the stems creeping below the surface. Herbaeæ Borr.*

36. *S. herbácea* L. (least *W.*); leaves orbicular serrate glabrous shining veined, ovaries glabrous. *E. B. t.* 1907.

Snowdon and other Welsh mountains, Skiddaw. Plentiful upon the summits of all the Highland mountains. *h.* 6.—The least of our British species, though not so small as is generally supposed, for its stems divide and creep below the surface of the earth, scarcely rising an inch above. In the Botanic Garden of Edinburgh what was supposed to be this species acquired a prostrate woody stem 2—3 feet long and nearly as thick as the little finger; but it more resembles the true *S. retusa*, and if really from the mountains of Sutherland, whence it is understood to have been brought by the late Dr. Graham, it is worthy of being sought for.

xvi. *Stamens mostly 2, and distinct. Anthers permanently yellow. Ovaries glabrous, lanceolate, acuminate. Style elongate, bifid. Stigmas entire or bifid. Catkins appearing before the leaves, sessile, terminal and lateral, large, obtuse, with very shaggy and silky scales. Leaves broadly elliptical or roundish, large, glaucous beneath; stipules large on the autumnal shoots. Shrubs 1—6 feet high, with numerous irregular crooked branches and hairy young shoots. Hastatæ Borr.*

[37. *S. *hastáta* L. (*Apple-leaved W.*); leaves broadly elliptical waved thin and crackling quite glabrous usually serrulate, stipules heart-shaped serrate about as long as the petiole, catkins clothed with silvery hairs, ovaries distinctly stalked. *S. malifolia Sm.*: *E. B. t.* 1617.

Sands of Barrie, near Dundee, Scotland. Norfolk? *h.* 5.—It is most improbable that this plant, which is truly alpine on the continent, growing in Switzerland only at great elevations, should be even naturalized upon the sands of Barrie, where Drummond met with it: the Norfolk station is entirely hypothetical, and equally unlikely. Remarkable for its broadly elliptical, shortly acuminate glabrous leaves, large stipules, and very shaggy compact catkins, about 1½ inch long.]

38. *S. lanáta* L. (*woolly broad-leaved W.*); leaves broadly oval pointed entire shaggy, stipules oval pointed entire, barren catkins clothed with yellow silky hairs, ovaries almost quite sessile. *E. B. S. t.* 2624. *S. chrysantha Fl. Dan. t.* 1057. *S. Caprea Fl. Dan. t.* 245.

Scottish mountains, rare. Glen Dole, Whitewater, Canlochan, and Glen Callader, all in the Clova mountains, Angusshire; Mealcuacllar, 8 m. west of Killin. *h.* 5, 6. — About 2 (or when cultivated 3) feet high, with large pale-grayish shaggy foliage, and golden *catkins* that may be reckoned among the handsomest of the genus. *Style* never cloven to the base; *stigmas* usually entire, but sometimes cloven on the same specimens. *Stamens* mostly 2, but occasionally 3; *filaments* quite distinct in our specimens, but we believe they have been sometimes observed more or less combined. *Stipules* towards the extremity of the autumnal shoots often longer than the petiole, but lower down sometimes not half as long.

2. *PÓPULUS* Linn. Poplar.

Scales of the *catkins* usually incise, very rarely quite entire. *Perianth* cup-shaped, oblique, entire, surrounding the *stamens* and *pistil*; nectariferous glands 0. — *Barren fl.* *Stamens* 4—30. — *Fertile fl.* *Stigmas* 2, bipartite or 3—4-cleft. *Caps.* 2-celled by the introflexion of the edge of the valves, loculicidal. — Name: *populus*, or the *tree of the people*, for such it was esteemed to be in the time of the Romans; or rather from *παίπαλλω*, to *shake*, on account of the tremulous motion of the leaves.

* *Scales of catkins hairy or silky. Catkins in fruit dense. Stamens* 4—8. *Stigma with narrow divisions. Leuce.*

1. *P. *álba* L. (*great white P.*, or *Abele*); leaf-buds downy not viscous, leaves roundish-cordate lobed toothed glabrous and shining above downy and very white beneath, old ones sometimes glabrous, fertile *catkins* while flowering more slender than the barren ones, scales entire or incise only at the apex, those of the barren flowers woolly of the fertile ones thinly hairy, stigmas (yellow) bipartite their segments linear. *E. B.* t. 1618.

Moist and mountain woods. *h.* 3, 4. — A large *tree*, with smooth bark and spreading branches, of very rapid growth. Old *leaves* sometimes quite glabrous on both sides. *Scales* of the fertile *catkins* caducous. It is impossible to say where this species, now so much cultivated, is truly indigenous, or if it have the smallest pretensions to be a native of this country. The late Dr. Graham informed us that it never flowered about Edinburgh, indicating that it was a much more southern plant. All the British species have the young branches and shoots cylindrical.

2. *P. *canéscens* Sm. (*gray P.*); leaf-buds downy not viscous, leaves roundish deeply-waved toothed hoary and downy beneath, old ones sometimes glabrous, fertile *catkins* as large as the barren ones, scales of both deeply palmatifid and sericeo-pilose, stigmas (purple) cuneate irregularly 3—4-lobed. *E. B.* t. 1619.

Wet turfy meadows and dry heaths, scarcely indigenous. Frequent in Norfolk: *Sm.* *h.* 3, 4. — *Tree* tall and handsome, of slower growth than the preceding, and producing better *wood*. Usually con-

founded with the last species on account of its downy leaves, and those of the young shoots from the root being often also palmately 3—5-lobed. Dr. Bromfield thought it a variety; M. Spach, however, considers it in reality much nearer the next, from which it is only to be distinguished with certainty by the leaf-buds and the leaves of the root-shoots, which in *P. tremula* are never palmate.

3. *P. trémula* L. (*trembling P.*, or *Aspen*); leaf-buds glabrous shining slightly viscous, leaves nearly orbicular and bluntly sinuate-toothed soon glabrous on both sides, fertile catkins as large as the barren ones, scales of both deeply palmatifid and sericeo-pilose, stigmas (purple) cuneate irregularly 3—4-lobed. *E. B. t.* 1909.

Moist woods. Frequent in Scotland, even at a considerable elevation on the mountains. *h.* 3, 4.—The *tree* is well known by the tremulous movement of its leaves with the slightest breath of wind, which is aided by their stalks being much and laterally compressed; a character, however, to be observed in most other species. The figure in *E. Bot.* and Smith's description are not taken from the usual form of the stigmas, although they may be occasionally divided as represented, the auricle being one of the lobes. This species alone, of all those which are reputed British, "occurs in the middle of our large woods remote from the enclosed country:" *Bromf.*

** *Scales of catkins glabrous, ciliate at the apex. Catkins in fruit lax, moniliform. Stam.* 8—30. *Stigmas reniform or roundish, crenate, sometimes 2-lobed at the apex. Aigeiros.*

4. *P. *nigra* L. (*black P.*); leaf-buds glabrous viscous, leaves ovate deltoid or rhomboid cuspidate pointed crenate or serrate quite glabrous on both sides, stipules ovate acuminate, stigmas roundish 2-lobed at the apex. *E. B. t.* 1910 (not correct as to the stigmas).

Watery places and river-banks, scarcely indigenous. *h.* 4.—A very large *tree* of quick growth, producing a light not valuable wood. The *Italian or Lombardy poplar* (*P. fastigiata* Pers.) is probably a variety of *P. nigra*, with erect, instead of spreading, branches.

ORD. LXXXVI. CUPULIFERÆ *Rich.*

Monœcious.—*Barren fl.* amentaceous or in a lax spike. *Stamens* 5—20, inserted into the base of scales or of a membranous valvate *perianth*, generally distinct.—*Fertile fl.* aggregate or spicate or amentaceous. *Ovary* with several cells, crowned by the rudiments of a closely adherent *perianth*, seated within a coriaceous or somewhat leafy involucre (*cupule*) of various forms. *Ovules* in pairs or solitary, pendulous or peltate. *Stigmas* several, nearly sessile, distinct. *Fruit* a bony or coriaceous 1-celled nut (a *gland*), 1—3 together, more or less enclosed in the involucre. *Seed* solitary. *Albumen* wanting. *Embryo* large: *cotyledons* plano-convex; *radicle* minute,

superior.—Trees or shrubs. Leaves with stipules, alternate, simple, often with veins proceeding straight from the midrib to the margin.

* *Barren flowers in a globose catkin. Anthers 2-celled.*

1. FAGUS. Fertile flowers 2 together within a 4-lobed prickly involucre. Stigmas 3, filiform.

** *Barren flowers in a long cylindrical catkin or spike.*

† *Anthers 2-celled.*

2. CASTANEA. Fertile flowers 1—3 together within a 4-lobed muricate involucre. Stigmas usually 6 (5—8), filiform.
3. QUERCUS. Fertile flowers solitary within a cup-shaped scaly at length indurated involucre. Stigmas 3, oblong.

†† *Anthers 1-celled.*

4. CORYLUS. Fertile flowers aggregate in a short compact catkin. Involucre of one piece, at length enlarged, leafy and lacinate, containing a single nut. Stigmas 2, filiform.
5. CARPINUS. Fertile flowers in a lax catkin. Involucre of 2 distinct at length enlarged leaves, containing 2 nuts. Stigmas 2, filiform.

1. FÁGUS Linn. Beech.

Barren fl. in a globose catkin. *Perianth* campanulate, 6-cleft. *Stam.* 8—15. *Anthers* 2-celled.—*Fertile fl.* 2 together within a 4-lobed involucre. *Perianth* urceolate, with 4—5 minute lobes. *Ovary* incorporated with the perianth, 3-celled, 2 cells becoming abortive. *Stigmas* 3, filiform. *Nuts* triquetrous, in pairs within the enlarged prickly involucre.—Name: φαγος, in Greek, from φαγω, to eat; on account of the nutritive qualities of the fruit.

1. *F. sylvática* L. (common B.); leaves ovate glabrous obsoletely dentate their margins ciliate. *E. B.* t. 1846.

Woods, especially on a chalky soil. Scarcely wild in Scotland, but abundant in forests in the south of England. *h.* 4, 5.

2. CASTÁNEA Tourn. Chestnut.

Barren fl. in a very long cylindrical interrupted spike. *Perianth* single, of 1 leaf, 5—6-cleft. *Stam.* 5—20. *Anthers* 2-celled.—*Fertile fl.* usually 3 (1—3) within a 4-lobed involucre. *Perianth* single, urceolate, 5—8-lobed, having the rudiments of 5—12 *stam.* *Ovary* incorporated with the perianth, 5—8-celled, each cell 2-seeded, all the cells except one mostly abortive. *Stigmas* 5—8, filiform. *Nuts* 1—2 together within the enlarged prickly involucre.—Named from *Castanea*, in Thessaly, which produced magnificent chestnut trees.

1. *C. *vulgáris* Lam. (*Spanish C.*); leaves oblong-lanceolate acuminate mucronato-serrate glabrous on each side. *Fagus Castanea* L.: *E. B.* t. 886.

Woods in the S. and S.W. of England. *h.* 5—7.—This noble tree is much cultivated in plantations on account of its timber. Usually the sterile flower has the *perianth* 6-cleft; the fertile 12 rudimentary *stamens*, 6 *styles*, and a 6-celled *ovary*.

3. QUÉRCUS Linn. Oak.

Barren fl. in a lax *catkin* or *spike*, without scales. *Perianth* single, 5—7-cleft. *Stamens* 5—10. *Anthers* 2-celled.—*Fertile fl.* aggregate or in a lax spike. *Involucre* 1-flowered, of many little scales united into a *cup*. *Perianth* single, closely investing the ovary, 6-toothed. *Ovary* usually 3-celled. *Style* short. *Stigmas* usually 3, oblong, compressed. *Nut* (or *acorn*) solitary, surrounded at the base by the enlarged cup-shaped indurated involucre.—Named, according to Lepelletier, from the Celtic *quer*, *beautiful*, and *cuez*, *a tree*; a term perhaps given to those few oaks on which the mistletoe was found: but the proper Celtic name was *derw*; hence *darach*, Gaelic; *δρυς*, in Greek, and *dryades*, as well as *druids*.

1. *Q. Róbur* L. (*common British O.*); leaves deciduous oblong-obovate deeply sinuate, their lobes obtuse, fruits aggregate in the axils of the uppermost leaves or along an axillary stalk, involucre 3—4 times shorter than the mature nut its scales oblong obtuse closely imbricate.—*α.* fruits 2—6 in a long-stalked spike. *E. B. t.* 1342. *Q. pedunculata* Willd.—*β.* fruits aggregate or on a rather shortly stalked spike. *Q. sessiliflora* Salisb.: *E. B. t.* 1845. *Q. Robur* Willd. *Q. intermedia* D. Don.

Woods and hedges, not uncommon, particularly in the Highlands of Scotland. *h.* 4, 5.—Dr. Greville (*Trans. Bot. Soc. Ed. i. p.* 65, *t.* 4, 5) has shown that there is no connexion whatever between the relative length of the fruit-stalk and the petiole. The flowers are sessile upon the *peduncle* in both varieties; but in *β.* the peduncle is mostly very short, or almost wanting, in *α.* much elongated: between these there is every gradation. *Q. intermedia* is said to have the lobes of the leaves separated by obtuse angles, and the *Q. Robur* and *Q. sessiliflora* by acute angles; but both kinds may be observed on the same branch, and sometimes on the same leaf. The word *Robur* is derived from *rore*, another Celtic word for the *oak*; whence arises *robur*, *strength*, in Latin.

4. CORYLUS Linn. Hazel-nut.

Barren flowers in a cylindrical *catkin*; its scales 3-cleft, middle lobe covering the two lateral ones. *Perianth* 0, except the two inner collateral scales of the catkin which cohere at their base to the outer one (or true scale). *Stam.* 8. *Anthers* 1-celled.—*Fertile fl.* 1—2 together within a minute involucre of 2—3 cohering laciniate hairy scales, the whole collected into a short gemmaceous bracteate *catkin*. *Perianth* closely investing the

ovary, and scarcely distinguishable from it. *Stigmas* 2, filiform. *Nut* invested with the enlarged, united scales of the involucre, which are coriaceous at the base, and leafy and laciniate at the summit.—Named from *κορυς*, a *casque* or *cap*; the fruit, with its involucre, appearing as if covered with a bonnet.

1. *C. Avellána* L. (*common H.*); stipules oblong obtuse, leaves roundish-cordate pointed, involucre about the length of the fruit unarmed campanulate 2—3-partite rather spreading torn at the margin. *E. B. t.* 723.

Hedges and copses, abundant. *h.* 2—4.—The young forked twigs of this plant constitute the celebrated divining rod (*virgula divinatoria*). From the Anglo-Saxons we have derived our word *hazel-nut*, which they called *hæsl-nutu*; from *hæsel* a *cap*, and *hnut*, a *nut*.

5. *CÁRPINUS* Linn. Hornbeam.

Barren fl. in a cylindrical *catkin*; its scales roundish. *Stam.* 8—14. *Anthers* 1-celled.—*Fertile fl.* in a lax *catkin*; its scales small, deciduous. *Involucre* of 2 distinct stalked leaves (*catkin-scales*, Linn.), 2-flowered, ultimately large and foliaceous. *Perianth* urceolate, toothed at the apex, incorporated with the 2-celled *ovary*, of which one cell is abortive. *Stigmas* 2. *Nuts* in pairs, one attached to the summit of the stalk of each leaf of the involucre, ovate, striate.—Named from *car*, *wood*, and *pin*, a *head*, in Celtic; the wood having been employed to make yokes for oxen. The English "*hornbeam*" has the same signification.

1. *C. Bétulus* L. (*common H.*); leaves of the involucre of the fruit deeply 3-lobed, central lobe oblong at least 2—3 times longer than the lateral ones serrate or entire, limb of the perianth with short somewhat ovate acute teeth, nut 7—11-striate. *E. B. t.* 2032.

In woods and hedges, in a meagre, damp, tenacious soil, forming the principal part of the ancient forests on the north and east sides of London. *h.* 5.—Rather a small *tree*, with ovate or subcordate doubly serrate acute *leaves*, of which the veins are somewhat hairy, and which are beautifully plaited when young.

ORD. LXXXVII. CONIFERÆ Juss.

(including *TAXINÆ* Rich.)

Monœcious or diœcious, without a perianth.—*Barren flowers* in a deciduous *catkin*; *scales* peltate or erect, shortly stalked or sessile, bearing near the base at the edge, or on the under side, 2 or more distinct *anther-cells* (2 or more monadelphous *stamens* each with a single 1-celled anther?).—*Fertile flowers* generally in many- or few-flowered *cones*, sometimes solitary. *Ovary*, in

the cones, spread open, having the appearance of a dry or fleshy scale destitute of *style* or *stigma*, and arising from the axil of a membranous *bractea*; in the solitary flower sometimes apparently wanting or adhering to the ovule. *Ovules* naked, inverted or erect, with a large opening (*foramen*) at the summit. *Fruit* consisting either of a naked seed seated in a fleshy receptacle, or of a cone: the latter is formed of the scale-shaped ovaries which become enlarged and indurated or fleshy, and occasionally of the bractæ also, which are sometimes obliterated, and sometimes extend beyond the scales in the form of a lobed appendage. *Seeds* with a hard crustaceous integument. *Embryo* in the midst of fleshy and oily *albumen*, with 2 or more opposite *cotyledons*; the *radicle* next the apex of the seed, and having an organic connection with the albumen. —*Resinous trees or shrubs, of vast importance, inhabitants of various parts of the world. Wood in concentric layers, destitute of the large dotted ducts (bothrenchyma) so obvious in the Oak and other Dicotyledonous trees.*¹ *Leaves linear, acerose or lanceolate rigid, entire at the margins, or dilated and lobed, always with parallel veins, sometimes fuscicled and sheathing at the base.* —From the pine, *Pinus*, we derive an immense quantity of useful *timber, turpentine, pitch, &c.*; *P. Larix* yields *Venetian turpentine*; *P. Cedrus* is the *cedar of Lebanon*.

1. PINUS. Fruit (dry) a many-flowered cone; scales closely imbricate, all dry. Seeds 2 on the inner face of each scale, crustaceous, winged at the end.
 2. JUNIPERUS. Fruit (drupaceous) a small roundish few-flowered cone: scales closely imbricate; lower ones dry, empty; 3 upper fleshy, enclosing 1—3 bony wingless seeds.
 3. TAXUS. Fruit (drupaceous) composed of a cup-shaped fleshy receptacle (with dry empty scales at its base), surrounding a single naked bony seed.
- I. *Ovules inverted: foramen inferior. Pollen-grains oval, with darkly granular extremities and an intermediate transparent band; outer coat not ruptured readily by moisture. ABIE-TINEÆ Br.*

1. PINUS Linn. Fir.

Monœcious.—*Barren fl.* in crowded racemose *catkins*; scales attached by the base, with 2 *anther-cells*.—*Fertile fl.* in an ovate or oblong many-flowered *cone*; its scales closely imbricate, dry, at length indurated; lowest ones empty, the others

¹ The cells or fibres (*pleurenchyma*) of which the wood is composed, not being accompanied by vessels or ducts, are so pressed together that a transverse section exhibits under the microscope a kind of network, with square meshes formed by straight lines crossing each other at right angles, without any circular openings. The woody cells or fibres are moreover furnished on their side with curious gland-like disks, observable when a thin longitudinal slice is taken parallel to the medullary rays, but not when at right angles to these.

bearing two inverted *ovules* on the upper surface. *Seeds* 2 on each scale, crustaceous, terminated by a long winged appendage. — Name: *pin* or *pen*, in Celtic, means a *head*, or a prominent *crag*, or *mountain*; the *pine* delighting to grow in such places. — From the great diversity of forms in this genus, attempts have been made to subdivide it; but the only certain characters for the new genera depend on the scales of the cones, and on the form, position, and perennial nature of the leaves; we therefore retain it entire.

1. *P. sylvestris* L. (*Scotch F.*); leaves long and narrow rigid evergreen fascicled by pairs all round the branch, cones ovato-conical young ones stalked recurved as long as the leaves generally in pairs, scales with a small deciduous point below the summit where they are at length thickened, anther-scale shortly prolonged beyond the cells which open longitudinally. *E. B. t.* 2460.

Highlands of Scotland, where it constitutes vast natural forests. *h.* 5, 6. — A tree of great value, but only so when in a natural state and in a congenial soil: it yields the red or yellow deal. *P. sylvestris* and *P. Pinaster*, though not aborigines, are becoming established by spontaneous dissemination over the vast moorlands and bog-tracts of West Hants and Dorset.

II. *Ovules erect; foramen superior. Pollen-grains globose; the outer coat easily ruptured by moisture and cast off.* CUPRESSINÆ Br.

2. JUNÍPERUS Linn. Juniper.

Mostly diœcious. — *Barren fl.* in minute *catkins*; *scales* subpeltate, with 3—6 *anther-cells* opening longitudinally. — *Fertile fl.* in a minute few-flowered cone; scales closely imbricate, lowest ones dry and empty, upper 3 bearing an erect *ovule* at their base on the upper surface. *Seeds* usually 3 (1—3), bony, wingless, enclosed within the 3 enlarged fleshy upper scales of the cone, resembling a *berry*. — Name: probably from the Celtic *uaine*, *green*, and *bior*, a *prickle*, on account of the evergreen prickly foliage; or from *jeneprus* Celtic, *rough*: *Théis*.

1. *J. communis* L. (*common J.*); leaves 3 in a whorl linear mucronate keeled as long as or longer than the fruit. — *a. altior*; erect, leaves spreading linear-subulate nearly twice as long as the fruit. *E. B. t.* 1100. — *β. nana*; small procumbent, leaves linear-lanceolate imbricate about as long as the fruit. *J. nana* Willd.; *E. B. S. t.* 2743.

Woods and heaths, frequent. — *β.* Abundant in the mountains of Wales, Scotland, and Ireland, and on low ground in the northern parts. *h.* 5, 6. — A *shrub*, extremely variable in size, bearing numerous linear, mucronate, and pungent leaves. *Flowers* axillary, small. *Berries* bluish-black.

3. TAXUS Linn. Yew.

Dicæcious.—*Barren fl.* in oval *catkins*, surrounded at the base with imbricate bracteas, of which the inner ones are larger; *scales* crowded, peltate, with 3—8 *anther-cells* on the lower surface.—*Fertile fl.* a solitary erect *ovule*, seated on a fleshy disk, with a few imbricate scales at the base. *Seed* solitary, bony, contained in an open fleshy cup-shaped receptacle, resembling a *drupe*.—Name: probably from *τοξον*, a *bow*, because the wood was excellent for that purpose: *τοξον* also means an *arrow*; perhaps arrows were poisoned with the juice of its berries.

1. *T. baccáta* L. (*common Y.*); leaves crowded linear acute flowers axillary sessile.—*α.* branches spreading leaves distichous. *E. B.* t. 746.—*β.* branches fastigiate, leaves scattered. *T. fastigiata* Lindl. *T. Hibernica* Mack.

Mountain woods. *h.* 3.—*Leaves* linear, persistent, deep green. *Fruit* red, esteemed poisonous. Our *β.* is the *Irish* or *Florence-court yew*: two plants of it were found among juniper bushes on the mountains near Benoughlin (Lord Enniskillen's estate) about the middle of last century, by a tenant who brought one to Florence-court, from which all those now in existence were propagated: it is the pistillate plant, but it bears fruit if staminate flowers of the common kind be in the neighbourhood; the seeds, however, we understand, never yield the *Irish* form.

CLASS II.

MONOCOTYLEDONOUS¹, OR ENDOGENOUS
FLOWERING PLANTS.

Cellular and vascular. *Stem* (when perennial) not increasing by a succession of annual layers on the outside of the old ones, usually with no distinction of bark, wood, pith, or medullary rays, but consisting of cellular tissue, in which the vascular is inserted in confused bundles, or in a single ring, the newest formation being internal. *Leaves* mostly alternate below, often sheathing, permanent and withering on the stem, more rarely jointed and deciduous, with usually parallel nerves connected by simple transverse veins, rarely netted-veined. *Flowers* with a single *perianth* (or without one), the parts mostly

¹ From *μονος*, one or single, and *κοτυληδων*, a *cotyledon*.

arranged in a ternary manner (\mathcal{V} or $3n$), sometimes when in a double row the external one green and resembling a calyx. *Embryo* with one *cotyledon*, or if apparently 2 they are alternate. *Plumule* and *radicle* either within the cotyledon, or lodged in a cleft in its side, or attached to its flat face.

SUB-CLASS I. PETALOIDEÆ. (ORD. LXXXVIII.—CV.)

*Flowers never glumaceous, sometimes naked or nearly so (as in Araceæ, Pistiaceæ, Naiadaceæ, and Juncaginaceæ), generally with a more or less coloured perianth, the pieces of which are in a single or double whorl.*¹

CONSPECTUS OF THE ORDERS.

I. Ovary adnate with the tube of the perianth (inferior).

* *Leaves with parallel nerves and simple transverse veins.*

- 89. ORCHIDACEÆ. Flowers perfect, gynandrous; stamens and style united.
- 88. HYDROCHARIDACEÆ. Stamens free from the style. Three outer segments of the perianth herbaceous.—Floating plants.
- 90. IRIDACEÆ. Flowers perfect. Stamens 3, free from the style; anthers extrorse. Perianth wholly petaloid.
- 91. AMARYLLIDACEÆ. Flowers perfect. Stamens 6, free from the style; anthers introrse. Perianth wholly petaloid.

** *Leaves with netted veins.*

- 92. DIOSCOREACEÆ. Stamens and pistils in separate flowers.

II. Ovary superior, free, not adnate with the perianth.

* *Flowers perfect, containing both stamens and pistils, and with a perianth.*

† *Carpels and styles consolidated. Anthers introrse.*

- 94. LILIACEÆ. Perianth petaloid, conspicuous. Flowers scattered.
- 103. ORONTIACEÆ. Perianth herbaceous and scale-like. Flowers on a spadix. Fruit baccate.
- 97. JUNCACEÆ. Perianth usually dry and scariose, sometimes herbaceous and petaloid, but becoming dry when withered. Flowers scattered. Fruit capsular.

†† *Carpels united or distinct. Styles distinct or none, and the stigmas distinct.*

‡ *Leaves reticulate with branching veins. Fruit succulent, many-seeded.*

- 93. TRILLIACEÆ. Leaves not articulated with the stem. Stem simple, 1-flowered. Flowers perfect. Outer 3 sepals or all herbaceous.²

¹ Thus excluding the Grasses and Cyperaceous plants, where the stamens and pistil are covered by alternate imbricate membranous scales or bracteas, hence glumaceous.

² In the true *Smilacæ*, to which the *Sarsaparilla* belongs, the leaves are stalked and jointed with the stem, stem branched, many-flowered, flowers imperfect, sepals all petaloid, and the connectivum of the anthers is never prolonged beyond the cells. From the imperfect-flowered *Liliacæ* they principally differ by the structure of the leaves.

†† *Leaves with parallel longitudinal nerves, connected by simple transverse veins.*

95. MELANTHACEÆ. Anthers extrorse. Cells of ovary and fruit many-seeded.—Terrestrial plants.
98. BUTOMACEÆ. Anthers introrse. Cells of ovary and fruit many-seeded.—Water plants.
99. ALISMACEÆ. Perianth conspicuous, 3 inner segments highly developed and petaloid. Cells of ovary and fruit 1—2-seeded.—Water plants.
100. JUNCAGINACEÆ. Perianth inconspicuous; all the sepals similar, herbaceous or scarcely petaloid. Lower flowers stalked. Cells of ovary and fruit 1—2-seeded.—Marsh plants, but neither submerged nor floating.
105. NAIADACEÆ. Perianth inconspicuous; sepals all scale-like, cuneate at the base. Flowers all sessile, on a common peduncle; cells of ovary and fruit 1-seeded.—Submerged or floating plants.

** *Flowers imperfect (stamens and pistils in separate flowers) or without a perianth.*

105. NAIADACEÆ. Spadix thin or wanting. Spatha none or similar to the leaves. Perianth none or inconspicuous. Carpels 1—4.—Submerged or floating plants.
104. PISTIACEÆ. Spadix none. Flowers naked, 2 enclosed in a membranous spatha. Carpels solitary, 1-celled.—Floating plants.
101. TYPHACEÆ. Flowers crowded on a thick spadix, which is not enveloped by a spatha.
102. ARACEÆ. Flowers naked, crowded on a thick spadix, enclosed within a spatha.
96. RESTIACEÆ. Spadix none. Flowers bracteate, capitate. Ovary 2—3-celled, with solitary ovules. Fruit dry, capsular, loculicidal.
94. LILIACEÆ. Spadix none. Flowers solitary (on the middle of the leaf). Ovary 3-celled; cells with several ovules. Fruit succulent, indehiscent.—Shrubs.
99. ALISMACEÆ. Spadix and spatha none. Flowers stalked. Perianth conspicuous, 3 inner sepals petaloid. Carpels numerous 1-celled.

Div. I. *Ovary inferior, adnate with the tube of the perianth.*
(ORD. LXXXVIII.—XCII.)

* *Leaves with nerves from the base to the point, connected by simple transverse veins.* (ORD. LXXXVIII.—XCI.)

ORD. LXXXVIII. HYDROCHARIDACEÆ Juss.

Flowers perfect or imperfect, with a spatha. Limb of the perianth usually 6-parted; the 3 inner segments petaloid, rarely wanting; 3 outer herbaceous (very rarely petaloid?). Stamens free from the style. Ovary solitary, 1- (or spuriously 3—6-) celled; placentas parietal, sometimes projected into the axis and meeting there. Ovules anatropal. Stigmas 3—6. Fruit coriaceous or fleshy, indehiscent, 1—6-celled. Albumen 0. Embryo straight orthotropal. Radicle next the hilum.—Aquatics.

Leaves *radical*, with usually a sharply serrate margin, often floating, rarely rigid and submerged. Flowers whitish.—In *Boottia*, an East-Indian genus, there are 9—15 stigmas and cells to the ovary and fruit.

1. ANACHARIS. Ovary 1-celled. Stigmas 3. Leaves verticillate.
2. HYDROCHARIS. Ovary 6-celled. Stigmas 6, cuneate, bifid. Flowers 9—12-androus.
3. STRATIOTES. Ovary 6-celled. Stigmas 6, linear, bifid. Flowers polyandrous.

1. ANÁCHARIS Rich. Anacharis.

Diœcious. *Spatha* tubular, bifid at the apex, nearly sessile, containing a single flower.—*Barren fl.* *Perianth* 6-partite. *Stam.* 9.—*Fertile fl.* *Tube* of the *perianth* filiform, elongate; *limb* 6-partite. *Sterile stamens* 3, subulate. *Style* filiform, cohering with the tube of the *perianth*. *Stigmas* 3. *Fruit* baccate, 1-celled, few-seeded.—Leaves *verticillate* or *opposite*, *sessile*.—Name: *ava*, without, and *χαρις*, elegance; apparently in contrast to the next genus.

1. A. **Alsínástrum* Bab. (*long-flowered A.*); leaves 3—4 in a whorl linear- or oval-oblong minutely serrulate, *spatha* of the fertile flower many times longer than the ovary, stigmas ligulate. Bab. in *Ann. Nat. Hist.* ser. 2. i. p. 83. t. 8. A. *Nuttallii* Planch. *Udora Canadensis* Nutt. *Elodea* Rich.

Ponds, ditches, canals, and streams, now too generally diffused. 2. 7—10.—It is now known to be a purely American species, but the mode in which it arrived in this country remains as great a mystery as ever. The *stigmas* are usually 3, although 2 were observed by Mr. Babington; Mr. Kirk finds 3, but only 2 sterile stamens; these are occasional aberrations, there being 3 of each, unless when an accidental abortion has taken place. The stigmas are only emarginate in the British plant, but have a longitudinal line indicating a tendency to be bifid after being fertilised. The sterile plant has not been observed in this country.

2. HYDRÓCHARIS Linn. Frog-bit.

Diœcious.—*Barren fl.* *Spatha* 2-leaved, shortly stalked, about 2—3-flowered. *Perianth* 6-partite. *Stam* 9—12, connected at the base, surrounding 3 imperfect *styles*.—*Fertile fl.* on a long stalk, within the radical 1-leaved *spatha*. *Tube* of the *perianth* scarcely longer than the ovary; *limb* 6-cleft. *Sterile stamens* 6. *Stigmas* 6, oblong cuneate, bifid, the segments divaricating. *Fruit* coriaceous, roundish, 6-celled, many-seeded.—Leaves *stalked*, *reniform*.—Named from *ὕδωρ*, water, and *χαρις*, elegance; being showy aquatic plants.

1. II. *Mórsus-Ránæ* L. (*common F.*): *E. B.* t. 808.

Ditches and ponds in England and Ireland, Not wild in Scotland. *Pl.* 7, 8.—Floating, and sending down long *radicles* from its horizontal *stems*. *Leaves* petioled, reniform, entire. *Flowers* subumbellate, large, white, delicate, arising from pellucid membranous *spathas*.

3. STRATIÓTES Linn. Water-Soldier.

Diœcious. *Spatha* 2-leaved, stalked.—*Barren fl.* numerous in the *spatha*. *Perianth* 6-parted. *Stam.* 12—13, surrounded by 23—24 imperfect linear ligulate ones.—*Fertile fl.* solitary in each *spatha*. Tube of the *perianth* not longer than the ovary; *limb* 6-parted. Sterile *stamens* numerous. *Stigmas* 6, linear, bifid. *Fruit* baccate, 6-celled, many-seeded.—*Leaves sessile, radical, crowded, narrow*.—Name: *στρατιῶτης*, a soldier; on account of the numerous sword-like leaves.

1. *S. aloides* L. (*Water-Soldier*); leaves sword-shaped triangular acuminate-serrate. *E. B.* t. 379.

Lakes and ditches, particularly common in the fenny parts of Norfolk and Lincolnshire. Rare in the north: planted in the Lochs of Duddingston, Forfar, and Cluny, Scotland. *Pl.* 7.—A singular plant, with numerous *radical leaves*, thrown up from creeping *runners*, which penetrate far into the mud. *Scape* 4—6 inches long, compressed, 2-edged. *Flowers* white, from a compressed 2-leaved *spatha*. The *flowers* are diœcious, but sometimes the *stamens* on the fertile flower become perfect.

ORD. LXXXIX. ORCHIDACEÆ.

Perianth of 6 segments in 2 rows, mostly coloured; one, the lowest (so situated from the twisting of the ovary), usually differing in form from the rest and often spurred. *Stamens* 3, united with the style in a central column, the two lateral ones usually abortive, or sometimes the central one (in *Cypripedium*). *Anther* often deciduous, 2-, 4-, or 8-celled. *Pollen* powdery or waxy, cohering in masses. *Ovary* 1-celled, with 3 parietal receptacles. *Ovules* anatropal. *Style* forming part of the column with the *stamens*. *Stigma* a viscid space in front of the column. *Capsule* (rarely a berry) 3-valved. *Seeds* numerous; *testa* loose, reticulate. *Albumen* 0. *Embryo* solid, fleshy, orthotropal; *radicle* next the hilum.—Herbaceous plants, the *terrestrial species* having often knob-like roots. Many *tropical species* are *epiphytes*. *Flowers generally handsome, in spikes or racemes*.—The knobs of several species afford *salep*. The fragrant *vanilla* is the seed-vessel of *Vanilla aromatica*.

- I. *Anther 1, terminal. Pollen-masses smooth (not granular): pollen cohering firmly in a definite number of simple lobes, each of which is a pollen-mass, and finally waxy (or rarely pulverulent when bruised in water).*
1. MALAXIS. Outer sepals widely spreading. Lip superior, quite entire and similar to the other inner sepals. Spur 0. Anther opening longitudinally. Pollen-masses 4, in a double row.
 2. LIPARIS. Outer sepals widely spreading. Lip inferior, quite entire, larger than the other linear inner sepals. Spur 0. Anther opening longitudinally. Pollen-masses 4, in a single row.
 3. CORALLORHIZA. Sepals converging. Lip inferior, with 2 small lobes at the base. Spur free or adnate to the ovary. Anther opening transversely. Pollen-masses 4, oblique.
- II. *Anther 1, attached to the back of the column, or subterminal. Pollen-masses granular: pollen in a lax state of cohesion, or combined into granules or masses (which are not waxy) elastically cohering. Lip inferior.*
4. EPIPACTIS. Perianth connivent or spreading. Lip free from the column and not embracing it, much contracted or articulate in the middle; upper lobe entire at the apex, lower concave.
 5. LISTERA. Lip linear or oblong, 2-lobed at the apex.
 6. SPIRANTHES. Perianth ringent; the 2 lateral outer sepals erect, placed under and including the base of the lip, oblique at the base and more or less decurrent on the ovary. Lip beardless, canaliculate, embracing the column and cohering below with its produced base, with 2 callosities below the middle, entire at the apex.
 7. GOODYERA. Perianth ringent; the 2 lateral outer sepals spreading, placed under and including the gibbous base of the lip. Lip entire at the apex, free from the column, flat above and without callosities.
- III. *Anther 1, placed on the summit of the column. Pollen-masses farinaceous, collected into small lobes or granules elastically cohering together. Lip superior.*
8. EPIPOGIUM. Perianth spreading. Ovary not twisted.
- IV. *Anther 1, adnate to the face of the stigma. Pollen-masses granular: pollen cohering in an indefinite number of finally waxy granules or lobes, attached by an irregular elastic cellular tissue along the axis of the pollen-mass. Lip inferior.*
9. ORCHIS. Lip spurred. Glands of the stalks of the pollen-masses contained in a common little pouch.
 10. GYMNADENIA. Lip spurred. Anther-cells contiguous, parallel. Glands of the stalks of the pollen-masses naked, approximate.
 11. HABENARIA. Lip spurred. Anther-cells separated, diverging at the base. Glands of the stalks of the pollen-masses naked, distant.
 12. ACERAS. Lip without a spur. Glands of the stalks of the pollen-masses contained in a common little pouch.
 13. HERMINIUM. Lip without a spur. Glands of the stalks of the pollen-masses naked, distinct.
 14. OPHRYS. Lip without a spur. Glands of the stalks of the pollen-masses each in a distinct little pouch.
- V. *Anthers 2, lateral, with a central one sterile and petaloid.*
15. CYPRIPIEDIUM. Lip large, inflated.

- I. *Anther* 1. *Pollen* cohering firmly in a definite number of simple smooth (not granular or pulverulent) lobes, each of which is a pollen-mass and finally becomes waxy (or rarely pulverulent when bruised in water). MALAXIDÆ.

1. MALAXIS Sw. Bog-Orchis.

Outer *sepals* widely spreading: the two lateral inner ones reflexed, smaller than the outer. *Lip* without a spur, very small, superior, undivided. *Column* very short. *Anther* opening longitudinally. *Pollen-masses* in two pairs, placed the one behind the other.—Name: *μαλαξίς*, a softening, from *μαλασσω*, to soften; on account of the tender nature of the plant.

1. *M. paludosa* Sw. (*Bog-Orchis*); leaves 3—5 oval very concave papillose at the extremity, lip concave acute. *E. B.* t. 72. *Ophrys* *L.*

Spongy bogs, in many places, but often overlooked on account of its small size. Frequent in the valleys of Clova. *ϗ.* 7—9.—*Stem* 2—4 inches high. *Flowers* erect, minute, in a small greenish spike. Outer *sepals* ovate, one of them recurved, the other two erect and with their bases embracing the base of the lip, which is thus also erect; the two lateral inner ones recurved.

2. LIPARIS Rich. Liparis.

Perianth spreading, uniform, with linear segments. *Lip* inferior, undivided, reflexed. *Column* elongate. *Pollen-masses* in 2 pairs in a single row.—Named from *λίπαρος*, fat, or unctuous to the touch.

1. *L. Loesélii* Rich. (*two-leaved Liparis*); leaves 2 broadly lanceolate, scape trigonal, lip entire longer than the unequal leaves of the perianth. *Malaxis* Sw. *Ophrys* *L.*: *E. B.* t. 47. *Sturmia* Reich.

Sandy bogs, in Norfolk, Suffolk, and Cambridgeshire. *ϗ.* 7.—*Stem* 6—8 inches high. *Flowers* few, in a lax spike, yellowish-green.

3. CORALLORHIZA Hall. Coral-root.

Sepals converging. *Lip* inferior, produced at the base; its spur adnate with the ovary, or free. *Column* free. *Anther* opening transversely, 2-lipped. *Pollen-masses* 4, oblique, not parallel.—Name: *κοράλλιον*, coral, and *ρίζα*, a root; from the curious ramification of the root.

1. *C. innata* Br. (*spurless C.*); spur very short adnate. *Ophrys* *Corallorhiza* *L.*: *E. B.* t. 1547.

Marshy woods, and more rarely in sand, in several parts of Scotland. *ϗ.* 7.—*Root* of thick, interwoven, fleshy fibres. *Stem* 6—12 inches high, greenish-white, with 2—3 lanceolate, acute, sheathing

scales rather than leaves. Flowers 6—8, in a short lax spike, pale yellowish-green. Outer sepals linear-lanceolate, keeled; 2 lateral inner ones shorter, erecto-connivent. Lip oblong, white, nearly entire, waved at the margin, with a few purple blotches, deflexed. Column elongate.—This genus holds a middle place between this section and the next. Mr. Brown considered the pollen-masses to be truly pulverulent. Dr. Lindley asserts that they are really waxy, although less so than in the preceding genera, and only show a pulverulent structure when bruised in water.

II. *Anther* 1, attached to the back of the column, or subterminal. *Pollen-masses granular; pollen in a very lax state of cohesion (farinaceous), or combined into lobes (but not waxy) elastically cohering (sectile).* NEOTTIDÆ.

4. EPIPACTIS Hall. Helleborine.

Lip free from the column, much contracted or articulate in the middle: lower lobe very concave, upper one entire at the apex. *Pollen* farinaceous. — Name given to some kind of *Hellebore* by the Greeks.

* *Upper segment of the lip with two projecting tubercles or plates at its base above. Column short. Anther sessile. Ovary straight, on a twisted stalk.* *Epipactis* Rich.

1. *E. latifolia* Sw. (*broad-leaved H.*); leaves oblong or ovate many-nerved, upper ones narrower, raceme elongate many-flowered, lower bracteas longer than the flowers, upper lobe of the lip broadly ovate or deltoid acute somewhat cordate at the base broadest below the middle with two tubercles at the base as long as or a little shorter than the sepals nearly quite entire.— α . leaves broadly ovate upper ones ovate-oblong, upper lobe of the lip roundish broader than long shorter than the broadly ovate sepals. *Scrapias E. B. t. 269.*— β . leaves ovate-oblong, upper ones lanceolate, upper lobe of the lip reniform broader than long as long as the ovate acute sepals. *E. ovalis Bab.: E.B.S. t. 2884.*— γ . leaves ovate-oblong, upper ones lanceolate, upper lobe of the lip triangular longer than broad shorter than the ovato-lanceolate sepals (bracteas mostly all longer than the flowers). *E. purpurata Sm.: E. B. S. t. 2275.*— δ . leaves ovate-oblong, upper ones lanceolate, upper lobe of the lip triangular longer than broad as long as the lanceolate sepals. *E. media Fries: Bab. Man.*

Woods in mountainous countries, not unfrequent.— β . Settle, Yorkshire; Little Doward Hill, Herefordshire; Ormeshead, Caernarvonshire.— γ . Woburn Abbey; Reigate, Surrey; Crawley, Sussex.— δ . Salop; Matlock; Abberley, Worcestershire. 2. 7, 8.—*Rhizome* creeping, with long fibres. *Stem* 1—3 feet high; lower leaves varying much in breadth, the upper ones always narrower. *Flowers* in a very

long lax *raceme*, greenish-purple, varying much in intensity, sometimes nearly green, sometimes all dark purple. We can perceive no essential difference in these *varieties*, between which there are intermediate forms: the shape and size of the lip, although variable, as well as its structure, distinguish this species from the next, which are the only two European ones of this section we are able to recognise.

2. *E. palústris* Sw. (*Marsh II.*); leaves lanceolate, bracteas mostly shorter than the slightly drooping flowers, upper lobe of the lip roundish-oval or obovate broadest at or above the middle undulato-crenate very obtuse or retuse with two crests at the base longer than the sepals. Serapias Scop.: *E. B. t.* 270. *S. longifolia* L.

Moist and marshy plaees, especially in a chalky soil. 4. 7.—*Stem* 1 foot high, purplish above. *Outer sepals* purple-green, inner ones and *lip* white, with rose-coloured streaks at the base.

** *Upper lobe of the lip* naked, recurved. *Column* elongate. *Anther* on a short thick stalk. *Ovary* sessile, twisted. *Cephalanthera* Rich.

3. *E. grandiflóra* Sm. (*large white II.*); leaves ovato-lanceolate sessile, bracteas longer than the glabrous ovary, sepals erect obtuse, upper lobe of the lip very blunt or rounded shorter than the rest of the perianth. Serapias L.: *E. B. t.* 271. *Cephalanthera* Bab. *E. pallens* Sw.

Woods and thickets, chiefly in a chalky soil. 4. 5, 6.—*Stem* a foot or more high. *Flowers* remote, racemose, quite erect; *sepals* all nearly equal, large, oblong-ovate, obtuse, cream-coloured, concave, including the small *lip* which is also white but yellowish within. Dr. Lindley ascribes to this and the following species a truly terminal anther, and therefore places them in the group *Arethuseæ*.

4. *E. ensifólia* Sw. (*narrow-leaved white H.*); leaves lanceolate much acuminate subdistichous, bracteas subulate much shorter than the glabrous ovary, sepals erect, outer ones sub-acuminate inner acute, upper lobe of the lip roundish somewhat obtuse or slightly pointed shorter than the rest of the perianth. Serapias L.: *E. B. t.* 494. *Cephalanthera* Rich.

Mountainous woods, but not general. 4. 5, 6.—*Flowers* approximate, subspicate, more or less diverging, pure white.

5. *E. rúbra* Sw. (*purple II.*); leaves lanceolate, bracteas longer than the downy germen, perianth spreading, upper lobe of the lip acuminate as long as the inner sepals marked with raised wavy lines. Serapias L.: *E. B. t.* 437. *Cephalanthera* Rich.

Very rare in mountainous woods, in England. "Bank sloping to the south on Hampton Common, Gloucestershire:" Sm. 4. 6, 7.—*Sepals* purplish-red. *Lip* almost white.

5. *LISTERA* Br. Bird's-nest. Twayblade.

Lip 2-lobed at the apex. *Column* wingless. *Anther* fixed by its base. *Pollen* farinaceous.—Named in honour of Dr. Martin Lister, an eminent British naturalist.

* *Column* very short. *Stem* with leaves. *Eulistera*.

1. *L. ovata* Br. (common *T.*); stem with only 2 ovate-elliptical opposite leaves, column of fructification with a crest in which the anther is placed. *Ophrys* *L.*: *E. B.* t. 1548.

Woods and moist pastures, frequent. *4.* 5—7.—*Stem* about 1 foot high. *Leaves* striate. *Flowers* distant upon the spike, yellowish-green. *Outer sepals* ovate; two lateral *inner* ones linear-oblong; *lip* long, bifid, without any teeth at the base. *Bractees* very short.

2. *L. cordata* Br. (Heart-leaved *T.*); stem with only 2 cordate opposite leaves, column without any crest, *lip* with a tooth on each side at the base. *Ophrys* *L.*: *E. B.* t. 358.

Sides of mountains in heathy spots, in the north of England and Scotland. *4.* 6—8.—*Roots* a few long fleshy fibres. *Stems* 3—5 inches high. *Flowers* few, very small, spiked, greenish-brown. *Sepals* somewhat spreading, *outer* ones ovate, lateral *inner* ones linear-oblong, *lip* pendent, linear.

** *Column* elongated. *Stem* with scales, without leaves. *Neottia* *L.*

3. *L. Nidus-A'vis* Hook. (common *B.*); stem with sheathing scales leafless, column without any crest, *lip* linear-oblong with 2 spreading lobes, toothless at the base. *Ophrys* *L.*: *E. B.* t. 48. *Neottia* *L.*: *Rich.*

Shady woods in many parts of England and Scotland. *4.* 5, 6.—*Root* of many, short, thick, densely aggregate, fleshy fibres. *Stem* 1 foot high. *Flowers* spiked, of a dingy brown. *Outer* and lateral *inner sepals* oblong-oval, nearly equal. Lobes of the *lip* spreading.—Dr. Lindley has shown that the species without leaves cannot be generically distinguished from the first group except by their habit, the characters upon which reliance has been placed being less important in reality than at first sight they appear. It is the original *Neottia* of Dodonæus; Linnæus in 1740 adopted the genus, uniting with it *N. æstivalis*, but afterwards removed it to *Ophrys*. The unemployed name was then chosen by Jacquin, when he separated *N. æstivalis* and its more immediate allies: there cannot, however, be a doubt but that the appellation ought not to be given to that which does not contain the *Nidus-Avis*, the only one having the root *neottius*, or like a bird's nest.

6. *SPIRÁNTES* Rich. Lady's Tresses.

Perianth ringent: the 2 lateral *outer sepals* erect, placed under and including the base of the *lip*, oblique at the base and

more or less decurrent on the ovary. *Lip* beardless, campanulate, embracing the wingless *column* and cohering below with its produced base, with 2 callosities below the middle, entire at the apex. *Pollen* farinaceous.—Flowers in a spirally twisted spike.—Named from *σπειρα*, a spiral, and *ανθος*, a flower or inflorescence.

1. *S. autumnális* Rich. (*fragrant* L.); leaves radical oblong subpetiolate, spike unilateral, bracteas pubescent shorter than the flower, lip oblong. *Ophrys spiralis* L.: *E. B. t.* 541. *Neottia* Sw.: *Brit. Fl.*

Dry hilly pastures in various parts of England in a chalky or gravelly soil. γ . 8, 9.—*Knobs* 3—4, oblong. *Stem* 4—6 inches high, rather bracteate than leafy. *Flowers* singularly spiral on the stalk, greenish-white. Upper outer and 2 lateral inner sepals combined. *Lip* longer than the rest of the flower, oblong, broader and crenate at the apex. *Stigma* and *anther* both acuminate.

2. *S. æstivális* Rich. (*Summer* L.); knobs long cylindrical, radical leaves oblongo-lanceolate much shorter than the stem, cauline narrow-lanceolate, spike lax, bracteas glabrous shorter than the flower. *Neottia* Bab. in *E. B. S. t.* 2817: *Brit. Fl.*

Bogs and marshes. Between Lyndhurst and Christchurch in the New Forest, Hants; Wire Forest, Worcestershire. St. Ouen's Pond, Jersey. γ 7, 8.

3. *S. gemmipara* Lindl. (*drooping* L.); knobs long cylindrical, radical leaves linear-lanceolate about as long as the stem, cauline ones triangular lanceolate, bracteas glabrous shorter than the flower, spike glabrous dense 3-ranked, sepals equal obtuse cohering together, lip oblong twice as broad at the base as at the obtuse crenulate apex, slightly constricted in the middle, ovary pyriform. *Neottia* Sm.: *E. B. S. t.* 2786 (bad). *N. cernua* Brit. *Fl.* *Spiranthes* Bab. in *Linn. Soc. Trans.* xix. p. 262, t. 32.

Castletown, near Berehaven, Co. Cork, Ireland. γ . 8, 9.—We revert to the name *gemmipara*, as Dr. Lindley has shown that this species is not the same as the true *S. cernua* Rich.

7. GOODYERA Br. Goodyera.

Perianth ringent: the 2 lateral outer sepals placed under and including the gibbous base of the lip. *Lip* entire at the apex, free from the *column*, flat above and without callosities. *Pollen-masses* sectile. *Pollen* angled.—Named in compliment to Mr. John Goodyer, a Hampshire botanist of the time of Gerard.

1. *G. répens* Br. (*creeping* G.); creeping, lower leaves ovate

petiolate, sepals and lip ovato-lanceolate. *Satyrrium* L.: *E. B.* t. 289.

Old fir forests in the north, and especially in the N. Highlands of Scotland (near Fullarton House, Ayrshire, introduced but now naturalized). 4. 3.—*Leaves* mostly radical. *Stem* a span high, bearing bracteiform *leaves*. *Flowers* small, white. *Column* very short. *Pollen-masses* broadly oval, composed of large granules.

III. *Anther* 1, attached to the apex of the column. *Pollen-masses granular*: pollen in a lax state of cohesion (farinaceous), or collected into small granules or lobes (not waxy), elastically cohering (sectile). ARETHUSEÆ.

8. EPIPÓGIUM Gmel. Epipogium.

Perianth resupinate. *Sepals* nearly equal, spreading. *Lip* superior, 3-lobed, with an inflated short spur. *Column* with the stigma at the base in front. *Pollen-masses* 2, sectile, stalked; the stalks attached to a triangular gland. *Ovary* straight (not twisted). — Name: *επι*, upon (or uppermost), and *πωγων*, a beard; an appellation given by Gmelin, because the lip (called by him the beard) is uppermost.

1. *E. Gmelini* Rieh. (*Gmelin's E.*): *Ledeb. Fl. Ross.* iv. p. 77: *Hook. in Bot. Mag.* t. 4821. *E. aphyllum* Reich. *Satyrrium Epipogium* L. *Limodorum* Sw.

Stiff wet soil. Tedstone Delamere, Herefordshire: *Mrs. W. Anderton Smith*. 4. 8.—The root consists of thick branching fleshy fibres, and resembles that of *Corallorhiza*. *Scape* simple, sheathed with scales, tumid and jointed near the base. *Flowers* racemose, yellowish-white, partially streaked with red. *Sepals* nearly equal. Lateral lobes of the lip small, patent; terminal one large, entire, concave, studded with raised points in lines, furnished at the base with an inflated and ascending spur. *Column* short, bearing the large stigma in front. *Anther* sunk in a cavity at the top of the column, 2-celled; cells opening longitudinally.

IV. *Anther* 1, adnate to the face of the stigma. *Pollen-masses granular*; pollen cohering in an indefinite number of finally waxy granules or lobes, attached by an irregular elastic cellular tissue along the axis of the pollen-mass (sectile). OPHRYDEÆ.

9. O'RCHIS Linn. Orchis.

Lip spurred. *Glands* of the stalks of the pollen-masses contained in a common little pouch. — Name: *ορχις*, an ancient appellation of plants with a double tuberous root.

* *Stalks of the pollen-masses each with a distinct gland.*

† *Knobs¹ of the root 2, undivided.*

‡ *Bractees 1-nerved.*

1. *O. Mório* L. (*green-winged Meadow O.*); lip 3-lobed somewhat crenate the middle lobe emarginate, sepals obtuse ascending connivent, spur ascending blunt rather shorter than the germen. *E. B. t.* 2059.

Meadows and pastures in England and Ireland. 4. 5, 6.—*Stem* from 1 span to 1 foot high. *Flowers* few, in a lax spike. *Outer sepals* purplish-green, forming a sort of helmet over the rest of the flower. *Lip* purple, pale in the middle, with purple spots.

2. *O. máscula* L. (*early purple O.*); lip 3-lobed somewhat crenate the middle lobe emarginate, outer sepals acute, the two lateral ones reflexed upwards, lateral inner sepals converging, spur obtuse rather longer than the germen. *E. B. t.* 631.

Woods and pastures, frequent. 4. 4—6.—*Stem* 1 foot high. *Leaves* generally marked with dark purple spots. *Flowers* in a lax oblong spike, purple, sometimes fragrant; the centre of the lip is whitish at the base and spotted, sometimes altogether white. A plant found by Mr. Moore in Co. Wicklow, Ireland, is referred by some to *O. máscula*; by others to *O. speciosa* Host (which, however, seems only a form of *O. máscula* with attenuated sepals); the leaves are invariably without spots: we have seen no specimens.

3. *O. ustuláta* L. (*dwarf dark-winged O.*); lip 3-partite marked with discoloured raised spots, segments narrow the middle one bifid, outer sepals connivent acute including the two lateral inner ones, spur nearly half as long and bractees as long as the germen. *E. B. t.* 18.

Dry chalky pastures, in England. 4. 5, 6.—*Stem* 4—5 inches high. *Lip* white, with purple, raised, not rough spots, while the rest of the flower is a dark, dingy purple. *Outer sepals* forming a sharp helmet-like covering, within which are the two small linear lateral inner ones. *Leaves* lanceolate, acute.

4. *O. fúsca* Jacq. (*great brown-winged O.*); lip deeply 3-lobed with raised rough dark points, lateral lobes linear-oblong, intermediate one large obcordate crenate and emarginate with a point in the sinus, outer sepals rather obtuse connivent including the two inner ones, spur obtuse about half as long as the germen. *O. militaris* Sm.: *E. B. t.* 16. *O. purpurea* Huds.

Chalky pastures and borders of woods in Kent. 4. 5.—*Stem* 1—2 feet high. *Leaves* ovate-oblong, obtuse. *Flowers* forming a

¹ *Knobs or tubercles* are simple roots which become succulent. In this Order they are often called *tubers*, by mistake; for a true *tuber* is not a root, but "a roundish underground succulent stem covered with buds (or eyes), from which new plants or tubers are produced,—as the Potato." *Lindl.*

handsome *spike*, with variegated purple *inner sepals*; the *outer* ones of a dark greenish-purple, the *lip* much paler.

5. *O. militaris* L. (*Military O.*); lip deeply 3-lobed with small raised rough points, the two lateral lobes linear-oblong several-veined short, middle lobe dilated at the extremity and deeply emarginate with an intermediate point, outer sepals acuminate connivent including the 2 lateral inner ones, spur obtuse about half as long as the germen, bractees very short. *Bicheno* in *E. B. S.* t. 2675.

Chalky hills, principally about Reading, on both sides of the Thames. 4. 5.—Intermediate, in the construction of its *flowers*, between the preceding and the following, but most allied to the former. *Outer sepals* pale ash-coloured. *Lip* deep purple, white in the middle. *Leaves* oblong, rather acute.

6. *O. tephrosánthos* Vill. (*Monkey O.*); lip 3-partite with small raised rough points the two lateral lobes linear 1-veined, intermediate one deeply bifid with a point in the sinus, outer sepals acuminate connivent including the two lateral inner ones, spur half as long as the germen, bractees very small. *O. macra* Lindl. *O. Simia* Bab. *O. militaris* β . *Sm.*: *E. B.* t. 1873?

Chalky hills, in Berks, Oxfordshire, and Kent. 4. 5.—This species Dr. Lindley pronounces to be quite distinct from *O. tephrosanthos* of Villars; but Mr. Borrer not only doubts its being so, but whether it be even distinct from *O. militaris*, from which it chiefly differs by the narrower and less veined lateral lobes of the *lip*. Mr. Bentham unites both *O. fusca* and *tephrosanthos* of British botanists to *O. militaris*. *Flowers* pale purple, spotted. Segments of the *lip* narrow, deep purple.

†† *Bractees with 3 or more nerves.*

7. *O. laxiflóra* Lam. (*lux-flowered O.*); lip 3-lobed, the lateral lobes rounded in front crenulate longer than the truncate slightly emarginate intermediate one, spur cylindrical emarginate much shorter than the germen, lateral outer sepals reflexed, middle one erect, lateral inner ones connivent. *Bab.* in *E. B. S.* t. 2828.

Wet meadows and bogs, Jersey and Guernsey: *Mr. Babington*. 4. 5, 6.—“Allied to *O. Morio*, but that plant has single-nerved bractees, and all the segments of its perianth, except the *lip*, are connivent. The short spur is also a valuable distinctive character.” *Bab.*

†† *Knobs 2, palmate. Bractees with 3 or more nerves.*

8. *O. latifólia* L. (*Marsh O.*); lip indistinctly 3-lobed its sides slightly reflexed crenate, outer sepals spreading, 2 lateral

inner ones connivent, spur cylindrical shorter than the germen, bracteas as long as or longer than the flower. *E. B.* t. 2308.

Marshes and moist meadows, common. \mathcal{U} . 6, 7. — *Stem* usually hollow. *Flowers* varying from pale rose-colour to crimson and deep purple, the *lip* dotted and marked with purple lines, sometimes of a lurid or brick colour on the west coast of Scotland, and white on the sands of Barrie, near Dundee. The species is known by its slightly lobed *lip*, with reflexed sides, and by the *bracteas*, which are leafy and longer than the *germen*. The leaves are nearly erect, and usually acuminate, but are sometimes bluntish and cucullate at the apex (*O. incarnata* Bab.).

9. *O. maculála* L. (*spotted palmale O.*); *lip* plane 3-lobed sometimes obscurely so, outer sepals spreading, 2 lateral inner ones connivent, spur cylindrical shorter and bracteas usually not longer than the ovary. *E. B.* t. 632.

Pastures and heaths, frequent. \mathcal{U} . 5—7. — A foot high, slender. *Stem* usually solid. *Leaves* distant, generally spotted with purple. *Flowers* white or pale purple, more or less spotted or streaked, especially the *lip*. The generally deeply lobed nearly flat *lip*, having the lateral lobes rounded, central one rather the longest and ovate, together with the usually small subulate *bracteas*, constitute the chief marks of distinction between the common state of this species and *O. latifolia*. An intermediate form, however, occurs (*O. angustifolia* Reich., or *O. Traunsteineri* Koch), with the *lip* of *O. latifolia*, but the short bracteas (particularly the upper ones) of *O. maculata*. We doubt, therefore, if they be distinct; a doubt in which, we understand, Mr. Borrer joins.

** *Stalks of the pollen-masses connected by a common gland. Knobs undivided.*

† *Lip erect in æstivation.*

10. *O. pyramidális* L. (*pyramidal O.*); *lip* with 3 equal entire lobes and 2 protuberances at the base above, lobes oblong truncate, middle lobe sometimes emarginate, outer sepals spreading acuminate, spur subulate-filiform longer than the germen, bracteas 3-nerved. *E. B.* t. 110. *Anacamptis Rich.*

Pastures and waste ground, England and Ireland, chiefly in a chalky or clay soil. Mull of Galloway (on a sand-bank), Isle of Colonsay, and Fifeshire, Scotland. \mathcal{U} . 6—8. — *Leaves* very acuminate. *Flowers* of a delicate rose-purple, sometimes white, spirally arranged in a close, broad, and ovate *spike*.

†† *Lip spirally twisted in æstivation.*

11. *O. hircína* Scop. (*Lizard O.*); *lip* 3-partite waved at the base downy, segments linear, intermediate one twisted very long, outer sepals connivent including the small lateral linear

ones, spur very short. *Satyrium* L.: *E. B. t.* 24. *Loroglossum* Rich. *Himantoglossum* Spr.

Chalk-hills and bushy places, in Kent, Surrey, and Suffolk; very rare. 4. 7.—A most remarkable plant, which cannot be confounded with any other. The smell of its *flowers* is detestable, and similar to that of a *goat*, whence its Latin specific name. *Lip* purple towards the extremity, white and spotted towards the base; middle segment narrow, and more than an inch long.

10. GYMNADE'NIA Br. *Gymnadenia*.

Lip spurred. *Anther-cells* contiguous. *Glands* of the stalks of the *pollen-masses* naked, approximate.—Named from γυμνος, *naked*, and ἀήν, a *gland*; one of the essential characters of this genus.

1. *G. conópsea* Br. (*fragrant G.*). *Orchis* L.: *E. B. t.* 10.

Dry pastures and heaths, in mountainous or hilly countries, especially in Scotland, scenting the atmosphere with its fragrance. 4. 6—8.—*Stem* 1 foot high. *Knobs of the root* palmate. *Leaves* linear-lanceolate, keeled. *Flowers* rose-purple. *Lip* 3-lobed, the lobes equal, entire, rounded: the two lateral *outer sepals* spreading; 2 lateral *inner* ones connivent. *Spur* filiform, twice as long as the *germen*. The 2 *cells* of the *anthers* are separated at the base by a rostellate process as in *Orchis*, but each cell has there a perforation, through which the naked, large, and oblong *glands* of the stalks of the *pollen-masses* appear.—This genus is near the following in character, but it differs in habit.

11. HABENÁRIA Br. *Habenaria*. Butterfly-Orchis.

Lip spurred. *Anther-cells* separated, diverging at the base. *Glands* of the stalks of the *pollen-masses* naked, distant.—Named from *habena*, a *thong* or *strap*; which the lip sometimes resembles.

* *Spur* very short. *Peristylus* Blume.

1. *H. viridis* Br. (*green H.*, or *Frog-Orchis*); spur very short 2-lobed, lip linear bifid with an intermediate tooth, anther-cells without any process between their bases, bracteas much longer than the flowers, knobs divided. *Satyrium* L.: *E. B. t.* 94.

Dry hilly pastures, not unfrequent. 4. 6—8.—*Stem* 6—8 inches high; lower *leaves* nearly ovate, obtuse; *outer* and lateral *inner sepals* connivent and forming a helmet, green. *Lip* small, greenish-brown.

2. *H. albidá* Br. (*small white H.*); spur obtuse much shorter than the germen, lip 3-cleft the segments acute, middle one the longest, anther-cells with a rostellate process between their bases, sepals all nearly equal ovate concave, knobs cylindrical entire. *Satyrium* L.: *E. B. t.* 505. *Gymnadenia* Rich.

Mountain-pastures, not unfrequent. 4. 6—8.—About a span high. *Leaves* oblong, striate, lower ones obtuse. *Flowers* white, small, fragrant. • *Lip* scarcely longer than the other *sepals*, deflexed.

** *Spur* filiform, elongated. *Knobs* oval, entire. *Platanthera* Rich.

3. *H. bifolia* Br. (*lesser B.*); inner *sepals* connivent obtuse, spur twice as long as the germen, lip linear entire obtuse, anther oblong-truncate, its cells parallel. *E. B. S.* t. 2806. *Orchis* L. *Platanthera* Lindl.

Moist copses, meadows, and marshes, frequent. 4. 6—8.—Radical *leaves* usually 2, oblong-obovate, and attenuate at the base, both in this species and the next; cauline ones small, lanceolate.

4. *H. chlorántha* Bab. (*great B.*); inner *sepals* connivent obtuse, spur twice as long as the germen, lip lanceolate entire obtuse, anther broadly ovate truncate, its cells converging upwards twice as widely separated at the base as at the apex. *Platanthera* Lindl. *Orchis bifolia* Sm.: *E. B.* t. 22.

Dry pastures and heaths, sometimes in moist places, frequent. 4. 5—8.—A monstrosity has been sometimes found at Norris Castle Isle of Wight, in which the spur is absent. We are not convinced that this species is distinct from the preceding; the two agree precisely in general appearance; the difference consists merely in the anther of *H. chlorantha* being more dilated at the base, which may possibly be the effect of luxuriance; we admit it, however, because *H. bifolia* is itself in the same way intermediate between *H. chlorantha* and the genus *Gymnadenia*. In neither species of this section is there a rostellate process at the base of the anther, between its cells.

12. A'CERAS Br. Man-Orchis.

Lip without a spur. *Glands* of the stalks of the *pollen-masses* contained in a common little pouch.—Name: *a*, without, and *κερας*, a horn; in allusion to the absence of a spur.

1. *A. anthropóphora* Br. (*green M.*); lip longer than the germen. *Ophrys* L.: *E. B.* t. 29.

Dry chalky or clay pastures in the east of England. 4. 6.—*Knobs* ovate. *Stem* about a foot high. *Flowers* in a long spike. *Lip* tripartite, with linear segments, yellowish, with a red or brown margin, the middle lobe rather broad, deeply bifid. *Helmet* green, composed of the 3 connivent, concave *outer sepals*, including the 2 small linear-lanceolate, obtuse, lateral *inner* ones.

13. HERMÍNIUM Br. Musk-Orchis.

Lip without a spur. *Glands* of the stalks of the *pollen-masses* naked, distinct.—Name: probably derived from *ἔρμιν*, *ἔρμινος*, the knob or foot of a bed-post; in allusion to the root.

1. *H. Monórchis* Br. (*green M.*); radical leaves 2 lanceolate. *Ophrys* *L.*: *E. B.* t. 71.

Chalky pastures in the east and south of England. 4. 6, 7.—*Knobs* 2, very unequal. *Plant* 4—6 inches high, slender, with two lanceolate-oblong leaves at the base, and a small one on the stem or scape. *Flowers* small, green. *Perianth* bent down from the top of the erect germen. *Outer sepals* equal, ovate, shorter than the inner ones; lateral inner ones ovate, acuminate, undivided: lower or lip 3-fid; the two side-lobes rather small; intermediate one much longer, linear. *Pollen-mass* on a short stalk, with a large white gland.

14. *O'PHRYS* Linn. *Ophrys*. Insect-Orchis.

Lip without a spur. *Glands* of the stalks of the pollen-masses each in a distinct little pouch.—Name: *οφρυς*, the *eyebrow*; which Pliny says this plant was used to blacken. The flowers of all the species more or less resemble certain insects.

1. *O. apifera* Huds. (*Bee O.*); lip scarcely longer than the sepals tumid trifid, the intermediate lobe recurved at the margin emarginate with a long subulate reflexed appendage in the notch, anther elongated with a hooked point, outer sepals coloured ovate inner ones oblong bluntish downy. *E. B. t.* 383.

Chalky and clay soils in various parts of England and Ireland, in pastures and pits. 4. 6, 7.—*Flowers* large. *Outer sepals* purplish or greenish-white, lateral inner ones oblong, very small, of the same colour. *Lip* velvety or silky, rich brown variegated with yellow.

2. *O. arachnites* Willd. (*late Spider O.*); lip usually longer than the sepals dilated somewhat tumid nearly entire or with 4 shallow marginal lobes and a terminal flattened somewhat heart-shaped straight or ascending appendage, outer sepals coloured, inner ones deltoid downy, anther with a straight or hooked point. *E. B. S. t.* 2596.

Chalky downs of South Kent, between Folkstone and Sittingbourne. 4. 5, 6.—Allied to *O. apifera*, with which, and probably *O. aranifera*, the Rev. G. E. Smith considers that it forms frequent hybrids; the only positive distinctions are to be sought in the straight and never recurved appendage at the extremity of the lower lip, and in the more or less deltoid form of the purplish or green inner sepals.

3. *O. aranifera* Huds. (*Spider O.*); lip longer than the sepals tumid or convex rounded or obovate obscurely (or sometimes distinctly) 3-lobed, middle lobe large entire or emarginate without an appendage or with a mere gland or point in the notch, outer sepals green, inner ones somewhat linear, anther acute.—*a.* lip tumid, inner sepals glabrous. *E. B. t.* 65.—*β.* lip

usually convex, inner sepals scabrous. *O. fucifera* Sm.: *E. B. S.* t. 2649.

Chalky and clay pastures and pits. — β . Kent and Sussex. 4. 4, 5.—*Lip* of *var. a.* shorter and broader than in *O. apifera*; its colour deep brown, with paler lines not unfrequently resembling the Greek letter Π , these lines being glabrous, while the rest of the lip is clothed with short dense hairs. In *var. \beta*. the lines are more irregular in form, and the sides only of the lip are conspicuously hairy. Usually the lip of *a.* is obscurely lobed; and in β . almost entire, but sometimes more distinctly lobed than in *a.*

4. *O. muscifera* Huds. (*Fly O.*); lip oblong 3-fid middle segment larger 2-lobed, lateral inner sepals filiform, anther short obtuse. *E. B.* t. 64.

Chalky and clay pastures in England; abundant in many parts of Norfolk, Suffolk, Surrey, and Kent. 4. 5—7.—Well distinguished from all the preceding by its very slender, lateral *inner sepals*, which resemble the antennæ of an insect, and by its narrow *lip*, 2-lobed at the extremity, and having a broad pale bluish spot in its centre.

V. *Fertile anthers* 2, lateral, with a central one sterile and petaloid. CYPRIPIEDIEÆ.

15. CYPRIPIEDIUM Linn. Lady's Slipper.

Lip large, inflated. *Column* with a large terminal, dilated lobe (or sterile *stamen*) separating the 2 *anthers*. Two lateral or lower *outer sepals* often combined. — Named from $\kappa\upsilon\pi\rho\iota\varsigma$, *Venus*, and $\pi\omicron\delta\iota\omicron\nu$, a *sock* or *slipper*; i. e. *Venus' slipper*.

1. *C. Calcéolus* L. (*common Lady's Slipper*); stem leafy, terminal lobe of the column nearly oval, lip shorter than the calyx somewhat laterally compressed. *E. B.* t. 1.

Woods in the north of England, very rare (almost extinct). 4. 5.— One of the most beautiful and interesting of our native plants.

ORD. XC. IRIDACEÆ Juss.

Limb of the *perianth* 6-cleft, or 6-partite, sometimes irregular. *Stamens* 3, inserted into the base of the outer segments. *Filaments* sometimes united. *Anthers* fixed by their base, opening outwards. *Ovary* 3-celled, many seeded. *Style* 1. *Stigmas* 3, or 1 with 3 divisions, often petaloid or 2-lipped. *Capsule* 3-celled, 3-valved; *valves* bearing the dissepiments in the middle. *Seeds* round, hard. *Embryo* inclosed within a horny or firmly fleshy *albumen*, homotropal. *Radicle* next the hilum. — Herbs, rarely undershrubs. Leaves usually equitant, distichous and

cauline, sometimes radical. Flowers spathaceous, sometimes partly subterranean.—Orris-root is from Iris Florentina.

1. *IRIS*. Perianth regular 6-cleft; alternate segments longer and reflexed. Stigmas petaloid, covering and opposite to the stamens. Stamens distinct. (Leaves distichous.)
- 1^a. *SISYRINCHIUM*. Perianth 6-cleft; segments nearly equal, patent; tube scarcely longer than the limb. Style short. Stigmas filiform, alternating with the stamens. Stamens monadelphous. (Leaves distichous.)
2. *GLADIOLUS*. Perianth 6-cleft, almost in two lips. Style filiform. Stigmas entire, widening upwards, canaliculate. Stamens distinct, ascending. (Leaves distichous.)
3. *TRICHONEMA*. Perianth 6-cleft; segments equal; tube shorter than the limb; style filiform. Stigmas bipartite, slender. Stamens distinct. (Leaves radical.)
4. *CROCUS*. Perianth 6-cleft; segments equal; tube very long (much longer than the limb). Style filiform. Stigmas widening upwards, plaited, sometimes united to the middle. Stamens distinct. (Leaves radical.)

1. *IRIS* Linn. *Iris*. Flower-de-luce.

Perianth regular 6-cleft, each alternate segment longer and reflexed. *Stamens* distinct. *Stigmas* 3, petaloid-dilated, covering the stamens and opposite to them.—Named from *ῥίς*, the *rainbow*, on account of the beautiful and varied colours of its flowers.

1. *I. Pseud-ácorus* L. (*yellow Water I.*, or *Flag*); leaves sword-shaped, perianth beardless its inner segments smaller than the stigmas, stem terete, seeds angled. *E. B. t.* 578.

Watery places, wet meadows and in woods, frequent. *4.* 5—8. — *Flowers* large, deep (or rarely pale) yellow (*Bot. Mag. t.* 2239). *Rhizome* large, very acrid.

2. *I. fetidissima* L. (*fetid I.*, or *Gladdon*); leaves sword-shaped, perianth beardless its inner segments spreading about as large as the stigmas, stem one-angled, seeds globose. *E. B. t.* 596.

Woods, thickets, and pastures; frequent in the western and southern parts of England, particularly in Devonshire; rare in the middle and northern counties. South of Ireland. Not found in Scotland. *4.* 5—7. — *Flowers* much smaller than the last, dull livid purple, or very rarely yellow. The *leaves*, when bruised, emit a very disagreeable odour, which some have compared to roast-beef, whence its common English name, *roast-beef plant*.

[*Iris tuberosa* L. (*E. B. S. t.* 2818) is a native of the Levant and other countries bordering on the Mediterranean, formerly cultivated for its medicinal properties, and cannot be admitted into our Flora, although established about Penzance and near Cork. For the same reason we scarcely deem *I. Xiphium*, *I. xiphioides*, *I. pumila*, *I. Susiana*,

or *I. Germanica* worthy of notice, although all have been reported "indigenous." Nor can we admit *Sisyrinchium anceps* Lam., a well known North-American plant, — indeed the genus is not European, — and which has been found near Woodford, Co. Galway].

2. GLADIOLUS Linn. Gladiolus. Corn-Flag.

Perianth funnel-shaped 6-cleft ; segments oblique, arranged somewhat in two lips. *Stamens* distinct, ascending. *Stigmas* dilated upwards, canaliculate, entire.—Plants with a cormus, and equitant cauline leaves. — Name : *gladiolus*, a little sword ; in allusion to the shape of the leaves.

1. *G. *communis* L. (common *G.* or *C.*) ; leaves ensiform shorter than the stem, flowers and spathas unilateral, perianth subringent upper segments conniving margin of the uppermost covered by the two contiguous ones, lower three oblong-spathulate and nearly equal, anthers linear shorter than the filaments, seeds compressed winged. *Curt. Bot. Mag.* t. 86 : *Gawl.* in *Bot. Mag.* sub *G. Byzantino* (t. 874, ad calcem). *G. imbricatus* Bab. in *Ann. Nat. Hist.* ser. 2. xx. p. 158.

New Forest, Hants ; probably introduced. 2. 6.—Allied to *G. segetum* *Gawl.*, which however differs by the larger flowers, the uppermost division of the perianth incumbent over and not covered by the two next it, anthers longer than the filaments, and globose subbaccate seeds. Under *Crocus serotinus* in *Curt. Bot. Mag.* t. 1267, it is shown that *G. imbricatus* L. is the same as *G. segetum*.

3. TRICHONÉMA Ker. Trichonema.

Perianth single, petaloid, in 6 deep equal segments, tube shorter than the limb. *Stam.* distinct. *Filaments* hairy. *Style* filiform. *Stigmas* bipartite, slender. *Seeds* globose. — Named from *τριξ*, *τριχος*, a hair, and *νημα*, a filament.

1. *T. Columnæ* Reich. (*Columna's T.*) ; scape single-flowered mostly solitary slightly drooping, leaves filiform compressed furrowed flexuose, spathas longer than the tube of the corolla, style shorter than the stamens, stigmas bifid at the apex. *T. Bulbocolium* Sm. *Ixia* Sm.: *E. B.* t. 2549 (not of *Linn.*?).

Grassy pastures in Guernsey and Jersey. The Warren, Dawlish. 2. 3, 4.—A small bulbous plant, with a pale bluish-purple flower, having a yellow centre.

4. CRÓCUS Linn. Crocus.

Perianth single, coloured ; tube very long ; limb cut into 6 equal segments. *Stam.* distinct. *Style* filiform. *Stigmas* distinct or united to the middle, denticulate at the apex or incise,

widening upwards, plaited. — Named from *κροκη*, a *thread* or filament, from the appearance of the *saffron* of the shops, which consists of the dried stigmas of *Crocus sativus*. — (In all this Genus the germen is concealed under ground, elevated by a short peduncle from the solid bulb (*cormus*), which peduncle elongates, after the decay of the flower, and the capsules appear above ground.)

* *Flowers in spring, along with the leaves.*

† *Scapes enveloped in a tubular sheath.*

1. *C. *vérvus* Willd. (*purple Spring C.*); spatha simple, stigmas within the flower erect united to above the middle, free portions wedge-shaped incise at the end, cormus clothed with slender anastomosing fibres. *E. B. t.* 344. *C. sativus* β. *L.*

Meadows and fields. Plentiful about Nottingham. 4. 3.

†† *Scapes naked.*

2. *C. *mínimus* Red. (*least purple C.*); spatha double, stigmas erect longer than the stamens included in the solitary flower narrow denticulate at the end, leaves linear filiform, cormus with a membranous coat. *C. præcox* Haw. in *E. B. S. t.* 2645. *C. reticulatus* *E. Fl.* vol. iv. p. 262 (not *Bieb.*). *C. biflorus* *Mill*?

The park at Barton, Suffolk. 4. 3.

3. *C. *aúreus* Sm. (*golden C.*); spatha simple, stigmas erect shorter than the stamens united to above the middle, incise at the end, segments of the corolla oblong incurvo-patent, cormus coated with compact fibres. *Sm. Prodr. Fl. Gr.: E. B. S. t.* 2646.

With the preceding, and equally the outcast of gardens. 4. 3.— From this, *C. vernus* Curtis in *Bot. Mag. t.* 45 (*C. Mæsiacus* Gawl., but not of older authors) is perhaps not specifically distinct.

** *Flowers in autumn, before the leaves. Scapes enveloped in a tubular sheath.*

4. *C. *sátivus* *L.* (*Saffron C.*); spatha double, stigmas linear protruded drooping, cormus clothed with slender anastomosing fibres. *C. autumnalis* *Sm.: E. B. t.* 343.

Meadows; as about Saffron Walden in Essex, where it was formerly cultivated for the sake of its fragrant stigmas, which constitute *saffron*. 4. 9.— We fear this plant, far from being a native, is not even naturalized in this country.

5. *C. *nudiflórus* Sm. (*naked-flowering C.*); spatha simple, stigmas within the flower erect deeply laciniate, cormus with a membranous coat. — *a.* stigma equal in height with the an-

thers. *E. B.* t. 491.— β . stigma considerably longer than the anthers. *C. speciosus* Hook. (*M. Bieb.*, γ , not *Reich.*): *E. B. S.* t. 2752.

Meadows.— α . Between Nottingham Castle and the Trent; near the Railway Station, Derby.— β . Meadows near Warwick, Warrington, and about Halifax. γ . 9, 10.—This is the only species of the genus which can have any claim to be considered indigenous; but this we are not disposed to concede even to it.

ORD. XCI. AMARYLLIDACEÆ *R. Brown.*

Limb of the *perianth* coloured, 6-partite or 6-cleft. *Stamens* 6, inserted at the bottom of the segments, sometimes united by a membrane. *Anthers* opening inwards. *Ovary* 3-celled; the *cells* many-seeded, or in those whose fruit is fleshy, 1—2-seeded. *Style* 1. *Stigma* 3-lobed. *Fruit* capsular: either dry with 3 valves bearing the dissepiments in the middle, 3 cells and many seeds; or fleshy with 1—3 seeds. *Integument* of the seed not crustaceous. *Embryo* straight, in the axis of a fleshy *albumen*, orthotropal. *Radicle* next the hilum.—Flowers *large*, generally of a *bright colour*. Leaves *fleshy*, indistinctly *nerved*, all *radical*. Roots *bulbous*.

1. NARCISSUS. Perianth tubular at the base, with a 6-partite limb, and a campanulate crown or nectary.
2. GALANTHUS. Perianth 6-partite, campanulate, 3 outer sepals spreading, 3 inner smaller, erect, emarginate; crown none.
3. LEUCOJUM. Perianth 6-partite, campanulate, sepals all equal and a little thickened at the point; crown none.

1. NARCISSUS *Linn.* Narcissus. Daffodil.

Perianth coloured, tubular at the base, with a spreading 6-partite *limb*, and a campanulate or cup-shaped *crown* or *nectary*, within which are the *stamens*. *Anthers* dehiscing longitudinally. *Flowers* from a *spatha*.—Named from *ναρκη*, *stupor*; in allusion to the powerful and injurious smell of the flowers. More immediately derivable from the youth *Narcissus*, who is fabled to have been changed into this plant. An inhabitant sometimes of watery places, by the banks of streams.

1. *N. Pseudo-narcissus* L. (*common D.*); *spatha* single-flowered, nectary campanulate erect crisped at the margin obsoletely 6-cleft, as long as the ovate segments of the *perianth*. *E. B.* t. 17.

Moist woods and thickets. Rare in Scotland; about Culross and Dunoon, but scarcely indigenous. Near Templeogue, Ireland. γ . 3, 4.—*Flowers* large, yellow.

2. *N. *poëticus* L. (*the Poet's N.*); spatha mostly single-flowered, nectary very short concave membranous and crenate at the margin, leaves with an obtuse keel. *E. B. t.* 275.

Heathly open fields on a sandy soil; Norfolk and Kent. *¶.* 5.—Larger than the last, with a white flower of a very different structure, and a reddish border to the yellow nectary.

3. *N. *biflorus* Curt. (*pale N.*); spatha usually 2-flowered, nectary very short concave membranous and crenate at the margin, leaves acutely keeled. *E. B. t.* 276.

Sandy fields; apparently wild in the south of England. About Dublin frequent. *¶.* 4, 5.—Similar to the last in the general form of the flowers, but they are smaller, of a pale sulphur-colour, and without the coloured border to the nectary.

(Besides the above, *N. conspicuus*, *incomparabilis*, *minor*, and *lobularis* have been all enumerated as “wild,” or “naturalized,” in England; none of them have however any right to a place in our Flora: and even two of those here admitted, because they were sanctioned by Smith’s authority, and figured in *E. Bot.*, ought to be rejected.)

2. GALÁNTHUS Linn. Snowdrop.

Perianth campanulate, of 6 pieces; 3 outer ones spreading, 3 inner smaller, erect, emarginate. *Anthers* opening by a pore. *Seed* with a whitish skin. *Flowers* from a *spatha*.—*Scape solid*.—Named from γαλα, *milk*, and ανθος, a *flower*. The French name, *perce-neige*, is very expressive.

1. *G. *nivális* L. (*common S.*): *E. B. t.* 19.

Woods, orchards, meadows, pastures, &c., in very many places in England, Scotland, and Ireland. *¶.* 2, 3.—*Bulb* ovate. *Leaves* 2, linear, keeled, glaucous-green. *Flowers* solitary, drooping, white, inner segments greenish.

3. LEUCÓJUM Linn. Snowflake.

Perianth campanulate, of 6 equal pieces, a little thickened at the point. *Anthers* opening by a slit near the apex. *Seed* with a black and shining skin. *Flowers* from a *spatha*.—*Scape hollow*.—Named from λευκος, *white*, and ιον, a *violet*.

1. *L. *æstivum* L. (*Summer S.*); spatha many-flowered, style club-shaped. *E. B. t.* 621.

Moist meadows, in the south-east of England. *¶.* 5.—*Leaves* long, linear, keeled; *scape* 2-edged. *Flowers* drooping, white, with a greenish point,

** *Leaves with netted veins.* (Ord. XCII.)

ORD. XCII. DIOSCOREACEÆ R. Brown.

Diœcious. Limb of the *perianth* with 6 divisions.—*Sterile fl.* *Stamens* 6 from the base of the *perianth*.—*Fertile fl.* *Ovary* 3-celled; *cells* 1—2-seeded. *Style* deeply trifid. *Stigmas* undivided. *Fruit* dry and flat, with 2 of its cells frequently abortive, or (in *Támus*) baccate. *Embryo* small, near the *hilum*, lying in a large cavity of cartilaginous *albumen*.—Stems *twining*, shrubby or herbaceous, *mostly tropical*. *Leaves with reticulating veins*. *Flowers small, bracteate*.—*Dioscorea sativa* affords the well-known *yam*.

1. TÁMUS Linn. Black Bryony.

Barren fl. *Perianth* single, in 6 deep segments.—*Fertile fl.* *Perianth* single, in 6 deep segments, contracted at the neck. *Stigmas* 3. *Berry* of 3 cells.—Name: supposed to be the *uva taminia* of Pliny, or *black bryony*.

1. *T. communis* L. (*common B.*); leaves undivided cordate acute. *E. B.* t. 91.

Hedges and thickets, England. 2l. 5, 6.—*Root* very large, acrid, black externally, fleshy. *Stems* long, twining, and reaching among trees and bushes to a great distance. *Flowers* yellowish-green, small. *Berry* red.

DIV. II. *Ovary superior, free, not adnate with the tube of the perianth.* (Ord. XCIII.—CV.)

* *Perianth conspicuous. Seeds with albumen.* (Ord. XCIII.—XCVII.)

ORD. XCIII. TRILLIACEÆ De Cand.

Flowers perfect. *Sepals* 6—10 (rarely 4), outer ones herbaceous; inner herbaceous or much larger and coloured, rarely wanting. *Stamens* 6—10. *Anthers* linear, the cells fixed one on each side near the middle or the apex of a subulate filament. *Ovary* free, 3—5-celled, with as many distinct *styles*. *Stigmas* inconspicuous. *Ovules* numerous, in 2 rows in each cell, ascending. *Fruit* succulent, 3—5-celled. *Seeds* numerous; the skin brownish, leathery. *Albumen* fleshy, with a minute *embryo* close to the *hilum*.—Stems *simple, herbaceous*. *Leaves sessile, verticillate, thin, with netted veins, not articulated with the stem, marcescent*. *Flowers large, terminal, solitary*.

1. PÁRIS Linn. Herb-Paris.

Perianth of 6—10 narrow, very patent or reflexed *sepals*, inner ones scarcely coloured. *Cells* of the *anthers* fixed one on each side near the middle of a subulate *filament*. *Berry* 3—5-celled.—Named, it is said, from *par*, *paris* (*equal*); on account of the regularity of its leaves and flowers.

1. *P. quadrifolia* L. (*common H.*); leaves ovate 4—5 in a whorl. *E. B. t.* 7.

Moist and wet shady woods, in many parts of England and Scotland. Killarney, Ireland. 4. 5, 6.—*Stem* 1 ft. high, with 4, rarely 3 or 5, whorled, large, ovate, acute *leaves* at its summit, the rest leafless. *Flower* single, terminal, on a foot-stalk about 2 inches long. *Perianth* of 8 (rarely 6 or 10) *sepals*; outer ones linear-lanceolate, green; inner similar to these, but narrower and more yellow.

ORD. XCIV. LILIACEÆ Juss.

Flowers perfect or very rarely imperfect. *Sepals* 6 (rarely 4 or 8) all petaloid, regular or nearly so, occasionally cohering at the base in a tube. *Stamens* 6 (rarely 3, 4, or 8) inserted upon the *sepals*. *Anthers* opening inwards. *Ovary* free from the *perianth*, 3- (rarely 2- or by abortion 1-) celled. *Style* 1, undivided. *Stigma* simple or 3- (or rarely 2-) lobed. *Fruit* succulent or dry and capsular, 3- (or rarely 2-) celled. *Seeds* usually placed one above another in 2 rows in each cell, sometimes in pairs or solitary. *Albumen* fleshy.—Herbs, shrubs, or trees, with bulbs or tubers or rhizomes or fibrous roots. Leaves with parallel veins or nerves, never articulated with the stem, mostly narrow. Flowers usually large and showy, sometimes small and greenish.—Many of the family contain a bitter juice. The root of *Scilla maritima* (or *Urginea Scilla*) affords the squill of the shops. Socotrine aloes are produced by *Aloe Socotrina*; Barbadoes aloes by *A. perfoliata*. New Zealand flax is the fibre from the leaves of *Phormium tenax*. Gum-dragon is the concrete juice of *Dracena Draco*.

* *Fruit fleshy. Roots never bulbous. (Ovules 2 in each cell, and filaments glabrous in British genera.)* ASPARAGEÆ.

1. ASPARAGUS. *Perianth* 6-partite, campanulate. *Stam.* 6, distinct. *Stigmas* 3, reflexed.
2. RUSCUS. *Perianth* 6-partite. *Stamens* connected at the base. *Style* surrounded by a nectary (tube formed by the sterile *stamens*). *Stigma* capitate. Flowers imperfect.
3. CONVALLARIA. *Perianth* campanulate, deeply 6-cleft. *Stamens* 6, distinct. *Stigma* 1. Flowers perfect.
4. POLYGONATUM. *Perianth* cylindrical, 6-cleft at the apex. *Stam.* 6, distinct. *Stigma* 1. Flowers perfect.

5. MAIANTHEMUM. Perianth 4-partite, spreading. Stam. 4, diverging, inserted into the base of the segments. Anthers ovate. Flowers perfect.

** *Fruit dry, capsular. Roots never bulbous. Flowers jointed with their pedicel.* ANTHERICEÆ.

6. SIMETHIS. Flowers perfect. Perianth 6-partite, spreading, deciduous. Stam. 6; filaments woolly. Ovules 2 in each cell.

*** *Fruit dry, capsular. Root bulbous. Flowers usually on a leafless scape, and with membranous bracteus or spathas, but no true leaves at the base of the pedicels which are not jointed with the flower. Ovules numerous in each cell.* SCILLEÆ.

† *Sepals combined below or forming a campanulate perianth. Anthers attached to the filament by their back above the base.*

7. AGRAPHIS. Perianth 6-partite, tubular-campanulate, sepals reflexed at the extremity. Filaments longish, decurrent.

8. MUSCARI. Perianth globose or subcylindrical, contracted at the mouth, 6-toothed. Filaments very short.

†† *Sepals distinct, spreading. Anthers attached to the filament by their back.*

9. ALLIUM. Flowers umbellate, inclosed at first in a 1-2-leaved spatha.

10. SCILLA. Flowers blue or purple, racemose or corymbose, on a scape. Spatha 0. Perianth deciduous.

11. ORNITHOGALUM. Flowers white, racemose or corymbose, on a scape. Spatha 0. Perianth persistent.

**** *Fruit dry, capsular. Root bulbous. Stem more or less leafy. Peduncles (or pedicels) without membranous bracteus at their base, springing from the axils of true leaves and not jointed with the flowers. Sepals distinct. Ovules many in each cell.* TULIPÆ.

† *Anthers erect.*

12. GAGEA. Flowers yellow, corymbose or umbellate. Sepals without a nectariferous fold or depression. Style conspicuous.

13. LLOYDIA. Flowers white tinged with red, solitary or few and corymbose. Sepals with a transverse nectariferous fold near the base. Style conspicuous.

14. TULIPA. Flowers usually solitary, rarely 2 on each stem. Style 0.

†† *Anthers attached above the base in front.*

15. FRITILLARIA. Sepals with a nectariferous depression at the base. Style 3-cleft at the apex.

15^a. LILIUM. Sepals with a longitudinal nectariferous furrow at the base. Style undivided. Stigma capitate.

* *Roots never bulbous. Fruit fleshy. Testa of seeds whitish (not black nor brittle).* ASPARAGÆÆ. (Gen. 1—5.)

1. ASPARAGUS Linn. Asparagus.

Flowers perfect or occasionally imperfect. Perianth campanulate tubular at the base, 6-partite, deciduous. Stamens 6,

distinct. *Anthers* peltate. *Ovary* 3-celled, with 2 *ovules* in each cell. *Stigmas* 3, reflexed. *Berry* globose, 3-celled.—Name: *ασπαράγος*, in Greek, from *σπαρασσω*, to *tear*; many of the species being armed with spines.

1. *A. officinális* L. (*common Asparagus*); unarmed, stem herbaceous mostly erect terete very much branched, leaves setaceous fasciculate flexible, peduncles jointed in the middle. *E. B. t.* 339.

In several parts of the west and south-west coasts of England. On an island, thence called "*Asparagus Island*," Kynance Cove, Cornwall. Giltar Point, Pembrokeshire; south-west coast of Anglesea. Links near Gosford, Scotland. 4. 6—8.—*Rhizome* creeping, throwing up numerous scaly erect or rarely procumbent *stems*, which, when cultivated, are the *Asparagus* of our tables. *Flowers* drooping, greenish-white, often imperfect, with obsolete *styles*. *Berries* bright red.

2. *Ruscus* Linn. Butcher's Broom.

Diœcious. *Perianth* spreading, of 6 sepals, persistent. *Filaments* combined in a tube.—*Barren fl.* *Anthers* 3 or 6, reniform, placed on the summit of the stamen-tube.—*Fertile fl.* *Anthers* 0. *Style* 1, surrounded by the tube of the sterile stamens. *Stigma* capitate. *Ovary* 1- (or 3-?) celled; *ovules* 2 collateral in each cell. *Berry* usually 1-seeded.—Name, anciently *bruscus*; from *beuskelen*, Celtic, meaning *box-holly*.

1. *R. aculeátus* L. (*common B.*); stem rigid branched, leaves ovate-acuminate very rigid and pungent bearing the solitary flowers on their upper surface. *E. B. t.* 560.

Bushy and heathy places and woods, especially in a gravelly soil. Abundant in the south of England and Jersey. Bothwell woods, and Skeldon woods near Ayr; but not truly wild in Scotland. 4. 3, 4.—*Flowers* minute, white, arising from the disk of the evergreen leaves. *Berry* red.

3. CONVALLÁRIA Linn. Lily of the Valley.

Flowers perfect. *Perianth* deciduous, shortly campanulate, deeply 6-cleft, segments recurved. *Stamens* 6, distinct, inserted into the very base of the perianth. *Anthers* oblong-linear, pointed. *Ovary* 3-celled, with 4—6 *ovules* in a double row in each cell. *Style* short, thick. *Stigma* 1, obtuse. *Berry* 3-celled, with 1 (or rarely 2) *seeds* in each cell.—*Flowers* *racemose*, with a membranous bractea at the base of the pedicels.—Name: *convallis*, a *valley*; from the locality of this plant.

1. *C. majális* L. (*sweet-scented L.*): *E. B. t.* 1035.

Woods and coppices, particularly in a light soil. Frequent in England; more rare, if indigenous, in Scotland. 4. 5, 6.—

Leaves 2, ovato-lanceolate, radical. *Scape* semicylindrical. *Flowers* racemed, very pure white, fragrant, segments recurved. *Berries* red, globose.

4. *POLYGÓNATUM* Tournef. Solomon's Seal.

Flowers perfect. *Perianth* tardily deciduous, cylindrical, shortly 6-cleft at the summit, the lobes erect. *Stam.* 6, distinct, inserted upon the middle of the tube of the perianth. *Anthers* oblong-linear. *Ovary* 3-celled, with 2—6 *ovules* in a double row in each cell. *Style* filiform, included. *Stigma* 1, obtuse. *Berry* 3-celled; cells 1—2-seeded.—*Peduncles* or *pedicels* axillary, without membranous bractees at the base.—Named from πολυς, many, and γονυ, γονατος, a knee or angle; on account of the angled stems.

1. *P. verticillátum* All. (*narrow-leaved S.*); leaves linear-lanceolate whorled. *Convallaria* L.: *E. B.* t. 128.

Woods and glens, very rare. Smalesmouth near Bellingham, Northumberland. Den of Rechip near Dunkeld, Parish of Rattray (in various places), and Blair-Athole, Perthshire. *4.* 6.—*Stem* 2 ft. high. *Leaves* numerous, bright green, 3—4 in a whorl. *Flowers* solitary, or with branched footstalks, drooping.

2. *P. multiflórum* All. (*common S.*); leaves ovate-elliptical alternate half-embracing the rounded stem, peduncles one- or many-flowered, filaments hairy. *Convallaria* L.: *E. B.* t. 279.

Woods and coppices, in various parts of England and the south of Scotland; also at Kingcausie, 7 miles from Aberdeen. *4.* 5, 6.—*Stems* 2 ft. high, bare of leaves below. *Leaves* large, marked with longitudinal nerves, secund; the *flowers* drooping in an opposite direction, white, greenish at the tips.

3. *P. officinále* All. (*angular S.*); leaves ovate-elliptical alternate half-embracing the angular stem, peduncles mostly single-flowered, filaments glabrous. *Convallaria Polygonatum* L.: *E. B.* t. 280.

Woods in England, rare. Northumberland; Yorkshire; Somerset. *4.* 5, 6.—Smaller than the last. *Flowers* greener, fragrant.

5. *MAIÁNTHEMUM* Mœnch. May-Lily.

Flowers perfect. *Perianth* deciduous, 4-partite, spreading. *Stam.* 4, distinct, diverging, inserted into the base of the segments of the perianth. *Anthers* ovate. *Ovary* 2-celled with 2 collateral *ovules* in each cell. *Style* short, thick. *Stigma* bifid, the segments recurved. *Berry* with usually 1 seed.—*Raceme* terminal, many-flowered, erect; bractea obsolete at the base of the pedicels.—Name: Μαιος, the month of May in mediæval Greek, and ανθημον, a flower.

1. *M. bifolium* DC. (*two-leaved M.*). *Smilacina* Desf. *Convallaria* L.: *Bot. Mag.* t. 510.

Dingley Wood near Preston, and Harewood near Blackburn, Lancashire (*Gerard*); Caen Wood near Highgate, Middlesex; Aspley Wood, Bedfordshire; Howick, Northumberland (now extinct); west side of Forge Valley near Hackness, 6 m. from Scarborough, Yorkshire (*James Braby, Esq.*). 4. 5, 6.—Nowhere in this country can this plant be considered indigenous, or even naturalized, unless near Hackness; where it has been found abundantly on the brow of a steep cliff in peat soil (quite undisturbed), along with *Trientalis*, among low bushes, shaded by oak-trees. *Rhizome* slender, branched. *Stem* erect, with 2 or sometimes 3 alternate cordate leaves above the middle. *Flowers* small, on longish pedicels.

** *Roots never bulbous. Fruit dry, capsular. ANTHERICEÆ.*
(Gen. 6.)

6. SIMÊTHIS Kunth. *Simethis*.

Flowers perfect, jointed with the pedicel. *Perianth* 6-partite, spreading, deciduous. *Stam.* 6, distinct. *Filaments* woolly upwards. *Anthers* oblong, emarginate. *Ovary* 3-celled, with 2 superposed ovules in each cell. *Style* filiform. *Stigma* entire. *Capsule* 3-celled; cells 2-seeded. *Seeds* black.—Named after the Sicilian nymph *Simethis* or *Simæthis*. (See *Ovid. Met.* xiii. 750.)

1. *S. bicolor* K. (*variegated S.*): *Kunth Enum.* iv. p. 618. *Anthericum* Desf. *Phalangium* DC. *Anthericum planifolium* L. *Phalangium Pers.* *Simethis Woods* in *E. B. S.* t. 2952.

Barren heaths. Near Bournemouth, Dorsetshire, perhaps introduced with seeds of trees from France. Derrynane, Co. Kerry. 4. 6.—*Leaves* linear, flat, somewhat carinate and folded especially at the upper part. *Scape* and *leaves* embraced by sheathing scales. *Flowers* paniced, on long stalks, erect, white within, externally violet or purple at the summit and on the margin. *Pedicels* with a membranous bractea at their base.

*** *Root bulbous. Fruit dry, capsular. Flowers usually on a leafless stem or scape and with membranous bracteas or spathas, but no true leaves, at the base of the pedicels which are not jointed with the flower. Ovules numerous in each cell of the ovary. Seeds with a black crustaceous shining coat.*
SCILLEÆ. (Gen. 7—11.)

7. A'GRAPHIS Link. *Blue-bell*.

Perianth 6-partite; sepals connivent below and forming a campanulate tube, somewhat connected at the base, recurved

at the extremity. *Stamens* 6, inserted below the middle of the perianth, on which the filaments are decurrent; alternate ones longer and somewhat exserted. *Capsule* obtusely 3-angled, 3-celled, 3-valved at the apex, few-seeded. — Flowers *racemose*, with membranous bracteas at the base of the pedicels. — Named from *a*, not, and *γραφω*, to write or mark. These plants which were supposed by some commentators to be the flowers noticed by Virgil (Ecl. iii. 106), whereon were inscribed the names of kings, but which now exhibit nothing resembling written characters, were placed in the genus named after the youth Hyacinthus, killed by Apollo, and by him changed into a plant whose foliage bore in dark streaks the initials of his name: the *A. nutans* having no mark or figure on the leaf was hence called *Hyacinthus non-scriptus*, which specific name is the same as *Agraphis*.

1. *A. nutans* Link (*wild Hyacinth*, or *B.*); flowers in a raceme drooping, sepals revolute at the points, bracteas in pairs, leaves linear. *Scilla* Sm.: *E. B. t.* 377. *Endymion* Dumort. *Hyacinthus non-scriptus* L.

Woods, copses, and hedge-rows; varying with white and more rarely rose-coloured flowers. 4. 4—6. — Leaves long, linear, channelled, acuminate. *Scape* 1 foot high, with two bracteas at the base of each short pedicel.

8. MUSCARI Tourn. Grape-Hyacinth.

Perianth of 1 piece, globose or subcylindrical, contracted at the mouth, 6-toothed. *Filaments* very short, inserted about the middle of the perianth and not decurrent on it, inflated 6-toothed. *Capsule* trigonous, with prominent angles; cells 2-seeded. — Flowers *racemose*. — Named from *μσχος*, *musk*, a smell yielded by one species.

1. *M. racemósum* Mill (*Starch G.*); flowers crowded ovate upper ones nearly sessile abortive, leaves linear flaccid keeled longer than the scape. *Hyacinthus* L.: *E. B. t.* 1931.

Grassy fields, &c. Sandy fields at Packenham, Suffolk, plentiful. 4. 5. — Flowers deep blue, smelling like starch.

9. A'LLIUM Linn. Onion. Leek. Garlic.

Perianth petaloid, of 6 ovate spreading pieces. *Stamens* inserted into the base of the perianth. *Caps.* triquetrous. — Flowers *umbellate*, arising from a 1—2-leaved *spatha*. — Named from the Celtic *all*, which signifies *acid*, *burning*. (*Théis.*)

* *Stem leafy. Leaves plane or keeled (not fistulose). Alternate filaments 3-pointed, middle point bearing the anther.*

1. *A. *Ampelóprasum* L. (great round-headed *G.*); umbels globose, leaves linear keeled acuminate, stamens exserted, 3 alternate ones deeply 3-cleft, middle point about as long as the entire part of the filament, spatha 1-leaved long pointed. —*α.* umbels compact without bulbs. *E. B. t.* 1657. —*β.* umbels loose, irregular, with many large bulbs. *A. Babingtoni* Borr. in *E. B. S. t.* 2906. *A. Halleri* Bab. *Man.* ed. 1.

Rare. —*α.* On Steep Holmes Island in the Severn (the remains of ancient cultivation). Guernsey. Great Arran Island, Galway Bay; Ireland. —*β.* Grade and Ruan Minor, Cornwall, (but only in or near orchards); near Little Bredy, Dorsetshire. Roundstone, and South Isles of Arran, Co. Galway. *¶.* 8. — *Bulb* compound, of 2—4 divisions. *Stem* 2—3 ft. high, with broad acuminate leaves, and large heads of purplish-white flowers. Allied to *A. Porrum*, the leek, in habit, but differing in its perennial and clustered young bulbs; and as Ray states his plant to have a simple bulb, Mr. P. B. Webb concludes with justice that the one from Steep Holmes Island is *A. Porrum*. It is not known as a native of the western districts of France, and *A. Porrum* itself is nowhere found truly wild. The specific name, from ἀμπέλος, a vine, and πρασον, a leek, means leek of the vineyard. *Porrum*, says Théis, is from *pori*, to eat, in Celtic; whence comes our word porridge. — The var. *β.* differs almost solely by having most of the flowers converted into large bulbs, a character which, although employed to distinguish the species of this genus, indicates rather a disease than a distinct organism; all the other characters may be the effect of such metamorphosis. Mr. W. Andrews finds it growing with *A. Ampeloprasum* in Great Arran Island, and considers it only a variety.

2. *A. Scorodóprasum* L. (*Sand G.*); umbels globose loose few-flowered with numerous spherical (small) bulbs, stem leafy below, leaves linear flat, sheaths 2-edged, stamens included or as long as the perianth, 3 alternate ones 3-cleft, middle point shorter than the lateral ones and the entire part of the filament, leaves of the spatha with a very short point. *E. B. S. t.* 2905. *A. arenarium* L.: *Sm.* in *E. B. t.* 1358 (as to the description, but not the figure).

Mountainous woods and fields, in sandy soil, principally in the N. of England and S. of Scotland, but not common. Portmarnock sands, Ireland. *¶.* 7. — *Bulb* simple, with numerous stalked purple offsets. *Stem* 2—3 ft. high, leafy below, terete, smooth, slender and wavy, yet firm and solid. *Spatha* usually single, scarious, short and broad, with a short point. *Bulbs* of flowers not so large as a pea. *Flowers* mostly few, never so numerous as the bulbs, on stalks usually much longer than the bulbs. This is not the *Scorodoprasum* of old authors, that name being sometimes given to *A. Ampeloprasum*, and

sometimes to a variety of the *leek* or *A. Porrum*; nor even of some modern botanists, whose plant is a large form of *A. sativum*: *Borrer*.

** *Stem terete, leafy. Leaves narrow, flat or keeled, or grooved above (not fistulose). Filaments all simple, connected at the base. Spatha 2-valved, one valve with a long point.*

3. *A. oleraceum* L. (*Field G.*); umbels lax bearing bulbs, stem leafy below, leaves linear grooved above semiterete or flat and ribbed beneath, stamens simple as long as or shorter than the perianth.—*a.* leaves thick semiterete and 4-ribbed beneath thinner towards the summit. *E. B. t.* 488.—*β.* leaves equally thick compressed and many-ribbed beneath. *A. carinatum* Sm. (not *Linn.*?): *E. B. t.* 1658.

Borders of fields in Essex, about Bristol, in Norfolk, Westmoreland, and Yorkshire.—*β.* Sandy ground on the south-east coast, and mountainous situations in the north of England. *γ.* 7.—*Stems* terete, leafy below. *Flowers* upon long wavy peduncles, pale-brownish white. The true *A. carinatum* of Linnæus is said to be characterized by its exserted stamens.

*** *Leaves fistulose. Filaments all simple, distinct.*

4. *A. Schænóprasum* L. (*Chives, or Chive G.*); umbels many-flowered globose without bulbs, stem naked or with one leaf terete, leaves subulate-filiform fistulose terete or grooved above, spatha of 2 ovate leaves, stamens simple about half the length of the perianth.—*a.* leaves and stem straight. *E. B. t.* 2441. *A. arenarium* Sm. in *E. B. t.* 1358 (as to the figure).—*β.* leaves spreading curved, umbel drooping before the flowers expand. *A. Sibiricum* L.: *Borr.* in *E. B. S. t.* 2934.

Meadows and pastures rare. Northumberland, Berwickshire, and Argyleshire.—*β.* between Kynance Cove and Mullion, and at Tintagel, Cornwall. *γ.* 6, 7.—*Stem* 1 ft. high. Heads of flowers compact, purplish. *Stam.* simple. *Spatha* of two short ovate leaves. *Umbel* without bulbs.—Specific name from *σχοινος*, a *rush*, and *πρασον*, a *leek*: i.e. *rush-leaved onion*. We consider the figure of *A. arenarium* in *E. B.* to have been taken from this species, the leaf being erroneously represented.

**** *Leaves fistulose. Alternate filaments 3-pointed, middle point bearing the anther.*

5. *A. vineale* L. (*Crow G.*); umbel globose bearing numerous bulbs, stem leafy below, leaves fistulose cylindrical slightly channelled above, spatha of one leaf short with long slender points, stamens exserted 3 alternate ones deeply 3-cleft, middle points half as long as the lateral ones and as long as the entire part of the filaments. *E. B. t.* 1974.

Corn-fields, waste places, &c., not unfrequent throughout England and the south of Scotland; also near Dublin. *γ.* 6.—*Stem* 1½—2

ft. high. *Bulbs* numerous. *Spatha* of one deciduous leaf. *Flowers* on longish peduncles, which are thickened upwards, few, erect, reddish, green on the keels, shorter than the *stamens*, whose *filaments*, as well as the *anthers*, are protruded. *A. compactum* Thuill. is a form of this species, in which the umbel is composed of bulbs only, without flowers.

6. *A. sphaerocéphalum* L. (*small round-headed G.*); umbel globose without bulbs, stem leafy below, leaves subcylindrical channelled above smooth fistular, *spatha* 2-valved short, *stamens* twice as long as the perianth the alternate ones 3-cleft, middle point longer than the lateral ones as long as the entire part of the filament, bulb accompanied by stalked offsets. *E. B. S. t.* 2813.

St. Vincent's Rocks, Bristol. Sands of St. Aubin's Bay, Jersey. 4. 6, 7.

***** *Leaves not fistulose, all radical. Stamens all simple.*

7. *A. *triquetrum* L. (*triangular-stalked G.*); perianth subcampanulate, segments oblong about twice as long as the *stamens*, leaves of *spatha* nearly equal, leaves linear acutely keeled not attenuated into a petiole, scape acutely triangular.

Hedges in Guernsey. 4. 5, 6.—*Flowers* white. This is a south of Europe plant: even in France it is confined to the southern provinces, so that we have no doubt that in Guernsey it has escaped from gardens, or been intentionally sown; it is now however quite naturalized there.

8. *A. ursinum* L. (*broad-leaved G., or Ramsons*); perianth spreading, umbel nearly plane, leaves ovato-lanceolate on footstalks, scape bluntly triangular. *E. B. t.* 122.

Moist woods and hedge-banks, frequent. 4. 4—6.—*Flowers* white. *Umbels* without bulbs, level-topped. *Spatha* of 2 ovato-lanceolate leaves.

[*Allium ambiguum* Sm. (*E. B. S. t.* 2803) has been found a little above Rochester, and at Eye-Castle Hill, Suffolk, but is not a native of this country. It differs from the other two of this section by the terete scape, umbels with bulbs, and flowers pink; the leaves are narrow, and do not taper into a petiole.]

10. *SCILLA* Linn. Squill.

Perianth of 6 sepals, spreading and deciduous. *Filaments* filiform, glabrous, inserted on the base of the perianth.—*Flowers* blue or purple, racemose or corymbose, on a leafless scape, without a *spatha*. *Bracteas* membranous or obsolete.—Name: *âsqyl*, in Arabic; also σκίλλα, in Greek, perhaps from σκελλω, to dry up; in allusion to its medical properties.

1. *S. verna* Huds. (*vernal S.*); bulb coated, raceme in a hemispherical few-flowered corymb, bracteas lanceolate obtuse

as long as or longer than the pedicels, leaves linear channelled. *E. B. t. 23.*

Common on the western and northern coasts of Great Britain, frequent in Orkney and Shetland. Ireland. \mathcal{A} . 4, 5.—*Plant* 4—5 inches high. *Leaves* few, nearly as long as the scape. *Flowers* fragrant, deep blue. *Filaments* dilated downwards, cells of *ovary* with 4 *ovules* in a double row.

2. *S. bifolia* L. (*twin-leaved S.*); bulb coated, raceme lax subcorymbosc, bracteas obsolete, leaves lanceolate 2 (rarely 3). *E. B. t. 24.*

A very dubious native. It exists in *Buddle's Herbarium*, and was received from the west of England by Mr. Sims of Norwich. \mathcal{A} . 3, 4.—*Flowers* pale blue. Cells of *ovary* with 6 *ovules* in a double row.

3. *S. autumnalis* L. (*autumnal S.*); bulb coated, raceme scarcely corymbosc, bracteas none, pedicels and stamens about as long as the perianth, leaves linear numerous. *E. B. t. 78.*

Dry pastures and rocks. In the south and south-west of England. Jersey. \mathcal{A} . 7—9.—*Flowers* pinkish-blue, in perfection before the leaves appear. Cells of *ovary* with 2 collateral *ovules*.

11. ORNITHÓGALUM Linn. Star of Bethlehem.

Perianth spreading, of 6 sepals, persistent. *Stam.* hypogynous, scarcely adhering to the perianth, alternately larger or dilated at the base. *Capsules* with 3 angles and 3 furrows.—*Flowers* usually white (not blue or purple), racemose or corymbosc, on a leafless scape. Bracteas membranous.—Named from *ορνις*, *ορνιθος*, a bird, and *γαλα*, milk.

1. *O. Pyrenáicum* L. (*spiked S.*); racemes elongated, filaments dilated below with a long point, peduncles equal spreading erect in fruit. *E. B. t. 499.*

Rare. Pastures in Somersetshire, Sussex, and Bedfordshire. \mathcal{A} . 6, 7.—*Bulb* ovate. *Leaves* long, linear, acuminate, channelled. *Scape* 1½—2 ft. long. *Raceme* elongated. *Flowers* much smaller than in the two following species, greenish-white.

2. *O. *umbellátum* L. (*common S.*); racemes corymbosc, peduncles longer than the bracteas, filaments lanceolato-subulate simple. *E. B. t. 130.*

Meadows and pastures in various parts of England. Near Glasgow; Kinross-shire; banks of the Jed, near the old castle of Fernihurst, Jedburgh. \mathcal{A} . 5, 6.—*Stem* 8—10 inches high. *Leaves* linear, acuminate, grooved. *Flowers* large, few, 6—9; lower pedicels very long, so that their flowers reach to the same height with the upper ones, thus forming a *corymb*, each having a membranous lanceolate bractea. *Segments* of the *perianth* green, with a white margin and white within.

3. *O. * nutans* L. (*drooping S.*); flowers pendulous unilateral, filaments broad membranous trifid middle point very short bearing the anther between the two longer lateral ones. *E. B. t.* 1997.

Fields and orchards, in several parts of England. 4. 4, 5.—*Flowers* few, shortly pedicellate but in a true lax *raceme*, larger than the last, and having the *filaments* of their *stamens* of a very different structure.

**** *Fruit* dry, capsular. *Root* bulbous. *Stem* more or less leafy. *Peduncles* (or *pedicels*) without membranous bracteas at the base, springing from the axils of true leaves, not jointed with the flower. *Sepals* distinct. *Ovules* many in each cell. TULIPEÆ. (Gen. 12—15.)

12. GÁGEA Salisb. *Gagea*.

Perianth of 6 persistent pieces connivent below, spreading above, without a nectariferous fold or depression at the base. *Filaments* not dilated at the base. *Anthers* erect. *Style* erect, trigonal, fistulose. *Capsule* triangular. *Seeds* subglobose.—*Flowers* corymbose or umbellate, yellow, with foliaceous bracteas.—Named in honour of the late Sir Thomas Gage, Bart., an excellent British botanist.

1. *G. lútea* Ker (*yellow Gagea*); radical leaves 1—2 linear-lanceolate longer than the angular scape, umbel simple, bracteas linear-lanceolate longer than the umbel, leaves of the perianth obtuse, bulb ovate solitary. *Ornithogalum* L.: *E. B. t.* 21.

Woods and pastures, in several parts of England and Lowlands of Scotland. 4. 3—5.—All the species of this genus are so similar, that more than one may exist in this country. The allied *G. pratensis* is equally abundant on the continent, and is by some considered a mere variety; it has, however, each bulb composed of 3 small ones, the whole included within a common covering. In another equally common species (*G. arvensis*) the bulb is composed of 2 smaller ones.

13. LLOÝDIA Salisb. *Lloydia*.

Perianth of 6 nearly equal, spreading, persistent pieces. *Filaments* subulate, glabrous. *Anthers* erect. *Style* erect. *Capsule* triquetrous, thin in texture. *Seeds* angled above and flat below.—*Flowers* solitary or few and corymbose, white with red or green veins. Bracteas foliaceous.—Named in honour of Mr. Edward Llhwyd, a learned antiquarian and skilful naturalist of the 17th century, who first discovered this plant in Britain.

1. *L. serótina* Reich. (*Mountain L.*); leaves semicylindrical,

cauline ones dilated at their base, flowers mostly solitary, sepals with a transverse nectariferous plait above the base. *Anthericum* L. : *E. B.* t. 793. *Phalangium* Poir.

On the Caernarvonshire mountains, rare. Snowdon, on the elevated rocks called Trigvylchau y Clogwyn du ymhen y Glyder, Clogwyn yr Ardhu, Crib y Distlh, &c.; near the summit of Glyder Fawr; Twll du on Cwm Idwel. 4. 6.—*Stem* 5—6 inches high.

14. TÚLIPA Linn. Tulip.

Perianth campanulate, of 6 pieces, without a nectariferous depression, deciduous. *Anthems* erect. *Stigma* sessile, 3-lobed. *Capsule* trigonous. *Seeds* flat.—*Flowers usually solitary, rarely two on each stem.*—Name: from *tolibun*, the Persian name for a *turban*; whose gay colours are similar to those of the tulip. (*Théis.*)

1. *T. sylvestris* L. (*wild Tulip*); stem 1-flowered somewhat drooping, leaves of the perianth ovate-acuminate bearded at the extremity, stamens hairy at the base, stigma obtuse. *E. B.* t. 63.

Chalk-pits in Norfolk, Suffolk, Hertfordshire, and Middlesex; meadows near Doncaster, Yorkshire. In Scotland, near Hamilton and Brechin; in an old quarry at Binny Craig, near Linlithgow; Pitreavie, Otterstone, and Pitcullo Castle, Fifeshire. 4. 4.—*Flowers* yellow, fragrant. *Anthems* and *pollen* yellow. *Leaves* linear-lanceolate. The *wild Tulip* increases by throwing out a long stout fibre from its root, at the extremity of which a *bulb* appears. Thus a new individual is planted at a considerable distance from its parent.

15. FRITILLÁRIA Linn. Fritillary.

Perianth campanulate, of 6 pieces, each with a nectariferous depression near the base, deciduous. *Anthems* attached to the *filament* above the base in front. *Style* 3-cleft at the apex. *Capsule* 3-celled, 3-valved, oblong. *Seeds* flat.—Name apparently from *fritillus*, a *dice-box*; the chequered colours in the flower resembling the board upon which the dice are thrown.

1. *F. Meleágris* L. (*common F.*, or *Snake's-head*); stem single-flowered, leaves alternate linear-lanceolate, points of the perianth inflexed, nectary linear. *E. B.* t. 622.

Meadows and pastures, principally in the east and south of England. 4. 5.—*Flowers* dull red, rarely white, chequered with darker lines and spots. Specific name derived from the *Numidia Meleagris*, or *Pintado*, whose plumage is chequered in a somewhat similar manner.

[*Lilium Martagon* L., or *Turk's-cap Lily*, (*E. B. S.* t. 2799) is now established in some parts of the country, and *L. Pyrenaicum* Gouan has been observed in North Devon and Argyleshire; other species may also have escaped from our gardens, but none have any right to be admitted into our Flora.]

ORD. XCV. MELANTHACEÆ *R. Brown*.

Perianth petaloid, 6-partite or tubular by the cohesion of the claws of the segments, which are often rolled inward before expansion. *Stamens* 6, perigynous. *Anthers* attached below the middle, at first turned outwards, but sometimes afterwards inwards by resupination. *Ovary* free, with 3 cells and many (rarely few) *ovules*. *Style* partly or entirely divided into 3. *Stigmas* undivided. *Capsule* 3-celled, usually separable into 3 carpels each with several seeds. *Integument* of the seeds neither black nor crustaceous, but membranous. *Albumen* firm, fleshy. — Root sometimes bulbous. Leaves sheathing at the base, with parallel nerves. — Strongly narcotic, diuretic, and cathartic. Veratrine is extracted from *Veratrum Sabadilla*.

1. COLCHICUM. *Perianth* tubular, very long; limb 6-partite. Styles long. Root bulbous. Scape leafless.
2. TOFIELDIA. *Perianth* 6-partite. Styles short. Root fibrous, stem with leaves.

1. CÔLCHICUM *Linn.* Meadow-Saffron.

Perianth tubular, very long, rising from a spathe; limb campanulate, 6-partite, petaloid. *Styles* very long. Cells of *ovary* and *fruit* many-seeded. — Named from *Colchis*, where it was said to grow abundantly.

1. *C. autumnale* L. (common *M.*); leaves plane broadly lanceolate erect. *E. B.* t. 133.

Meadows and pastures, chiefly in the north-west of England: *Ray*. In Suffolk, Oxfordshire, Staffordshire, Cheshire, and other places. Alloa, Scotland. γ . 8—10. — The flowers appear in succession, rising from the *corpus*, with a very long narrow tube, surrounded at the base with a membranous sheath. The *stamens* are inserted on the oblong-ovate segments of the pale purple *perianth*. *Germen* at the base of the *corpus*, the long thread-like *styles* running up the whole length of the tube. The leaves and *fruit* appear in spring and are withered before summer. In this species the flowers sometimes do not appear till spring along with the leaves, and then they are of a greenish white colour, violet at the base. (*E. B.* t. 1432.)

2. TOFIELDIA *Huds.* Scottish Asphodel.

Perianth 6-partite, having a small 3-partite involucre. *Styles* short. Cells of *ovary* and *fruit* many-seeded. — Named in honour of *Mr. Tofield*, an English botanist.

1. *T. palustris* *Huds.* (Mountain *S.*); spike ovate, stem glabrous filiform nearly leafless, petals obovate obtuse, *germen* 3-lobed, involucre at the base of the pedicel. *E. B.* t. 536. *T. borealis* *Wahl.* *Anthericum calyculatum* L.

Mountains of England, Scotland, and Ireland, in boggy places; not rare. 4. 7, 8. — *Rhizome* slightly creeping or fibrous. *Stem* 4—6 inches high. *Leaves* mostly radical, in fascicles, linear, sword-shaped, equitant. *Flowers* small, pale yellowish-white.

ORD. XCVI. RESTIACEÆ *R. Brown.*

Flowers capitate or spiked, bracteate, glumaceous, or white or colourless, 2—6-partite, seldom 0. *Stamens* hypogynous, 1—6; when 2 or 3, in a 4—6-divided *perianth*, opposite the inner segments of the latter. *Ovary* free, with 1 or more cells. *Ovules* solitary, pendulous, orthotropal. *Fruit* capsular or nucumentaceous. *Seeds* solitary, inverted. *Embryo* lenticular, at the opposite end from the hilum and outside the mealy albumen. *Radicle* inferior. — Herbs (and, in some species of *Eriocaulon*, marsh-plants) or under-shrubs. *Leaves* with parallel nerves or veins simple, narrow or 0. *Stems* naked, or more usually with sheaths slit on one side. *Flowers* generally monœcious, separated by scales or bracteas.

1. ERIOCAÚLON *Linn.* Pipewort.

Flowers white or colourless, collected into a compact, scaly head. — *Barren flowers* in the centre. *Perianth* 4—6-cleft, the inner segments united nearly to their summit. *Stam.* 4—6. *Anthers* 2-celled. — *Fertile flowers* in the circumference. *Perianth* deeply 4-partite. *Style* 1, very short. *Stigmas* 2—3, entire or bifid. *Capsule* 2—3-celled. *Seeds* with longitudinal rows of hairs. — Named from *ερion*, wool, and *καυλος*, the stem; in allusion to the downy stems or scapes of the species first known.

1. *E. septanguläre* *With.* (jointed *P.*); scapes striate longer than the cellular compressed subulate glabrous leaves, flowers 4-cleft hairy at the extremities as well as the scales, stamens 4, capsule 2-celled. *E. B.* t. 733. *E. pellucidum* *Mich.*

Lakes in mountainous countries, rare. In Skye, Coll, and a few of the neighbouring islands of the Hebrides. Connemara, Ireland, frequent. 4. 8. — *Rhizomes* creeping. *Leaves* pellucid, cellular, as is the scape. *Head* of numerous, minute flowers; each with an obovate, membranous, concave scale, nearly as long as itself. Two outer segments of the *perianth* duplicato-carinate, purplish; two inner white; those of the central sterile flowers united for a great proportion of the length, so as to be two-lipped at the extremity; each lip bearing a stamen, and above that a black sessile gland, and on each side, between the two lips, a stamen: in the centre between these are two black, stalked glands (abortive styles?). In the fertile flowers, the 4 segments are almost equally divided to their base, the inner having a black, sessile gland at the extremity. *Pistil* shortly stipitate. *Ovary* of 2 globose lobes. *Stigmas* 2, long, subulate.

ORD. XCVII. JUNCACEÆ *Juss.*

Perianth 6-partite, subglumaceous (usually scarious, sometimes herbaceous and coloured internally, but ultimately dry and hard), persistent. *Stamens* 6, inserted into the base of the segments, or sometimes 3, and then opposite the outer segments; *anthers* 2-celled. *Ovary* free, imperfectly 3-celled and many-ovuled, or 1-celled and 3-ovuled. *Ovules* anatropal. *Style* 1. *Stigmas* usually 3, sometimes 1. *Fruit* capsular, with 3 valves, bearing the dissepiment in the middle, rarely closed and by abortion 1-seeded. *Seeds* erect, with a thin testa. *Embryo* minute, next the *hilum*, and included within a firm fleshy or cartilaginous *albumen*. *Radicle* inferior. — Herbs. Leaves grassy or subulate, with parallel nerves or veins, sometimes wanting.

1. JUNCUS. *Perianth* glumaceous. Filaments glabrous. Stigmas 3. Capsule mostly 3-celled, many-seeded.
2. LUZULA. *Perianth* glumaceous. Filaments glabrous. Stigmas 3. Capsule 1-celled, 3-seeded.
3. NARTHECIUM. *Perianth* coloured. Filaments woolly. Stigma 1. Capsule 3-celled at the base, many-seeded.

1. JUNCUS *Linn.* Rush.

Perianth of 6 sepals, glumaceous. Filaments glabrous. Stigmas 3. Caps. 3-celled, 3-valved; valves with the seed-bearing dissepiments in their middle. Seeds numerous. (Leaves rigid, mostly terete, rarely plane, glabrous.) — Named from *jungo*, to join; the leaves and stems of this genus having been employed for cordage.

* Leaves none. Barren scapes resembling leaves. Panicle lateral. Flowers scattered. Seeds with their coat close, not appendaged.

1. *J. communis* Meyer (*common R.*); scapes very faintly striate soft and pliable, panicle branched, sepals spreading lanceolate nearly equal acute or acuminate rather longer than the obovate retuse capsule. — *α. effusus*; panicle usually diffuse, capsule not apiculate. *J. effusus* *L.*: *E. B. t.* 836. — *β. conglomeratus*; panicle usually dense and globose, capsule apiculate. *J. conglomeratus* *L.*: *E. B. t.* 835.

Marshy ground, common. 4. 7. — This is distinguished from *J. glaucus* by its soft, pliable, almost smooth (scarcely striate) scapes. Stam. usually 3, sometimes 6. The var. *α.* has sometimes the panicle dense and globose; and the var. *β.* has it sometimes more or less diffuse; so that the two are only to be distinguished by the capsule.

2. *J. glaucus* Ehrh. (*hard R.*); scapes striate rigid, panicle loose much branched, sepals lanceolate subulate nearly equal rather longer than the mucronate capsule, stamens 6. — *α.*

Ehrharti; scapes deeply striate, capsule elliptic-oblong. *E. B.* t. 665. — *β. diffusus*; scapes finely striate, capsule obovate obtuse. *J. diffusus* *Hoppe* in *Sturm's Deutsch. Flora*, 77, 10.

Wet pastures and by road-sides. — *β.* Rare, but pretty generally diffused in England. Kineardine, Seotland. 4. 7. — *Rhizome* creeping. *Scapes* 1—2 feet high, glaucous, rigid, covered at the base with deep purple-brown, membranous, shining *sheaths*. *Panicle* lax, erect. This is chiefly distinguished from the last by the rigid and more striate *scapes*, and *capsule* not retuse; but the *var. β.* is almost intermediate as to the capsule; indeed Dr. Bromfield considered it a hybrid between them. The pith in *var. α.* is said to be interrupted and in *var. β.* continuous, but this Dr. Bromfield has shown to be not always the case.

3. *J. Balticus* Willd. (*Baltic R.*); scapes very obscurely striate rigid, panicle erect branched, sepals nearly equal ovato-lanceolate very acute as long as the elliptical scarcely trigonous obtuse mucronate capsule, stamens 6. *E. B. S.* t. 2621. *J. arcticus* *Hook.* in *Fl. Lond.* t. 151 (not Willd.).

Sandy sea-shores in Seotland. Sands of Barry, near Dundee; between the Findhorn and Spey, and extending inland along the banks of the Lossie for 7 miles, Elginshire; Farr and Cape Wrath, Sutherland; Loch of Park, Kineardineshire. 4. 7. — This comes very near the true *J. arcticus*; it is, however, assuredly the *J. Balticus* of Willdenow, and differs from *J. arcticus* in its much taller and more rigid *scapes*, larger and decidedly branched *panicle*, and rounded, not trigonous, *capsules*. Both have exceedingly creeping, root-like stems or *rhizomes*, more so than any other species with which we are acquainted. *Flowers* dark brown, with a pale line down the centre of each segment.

4. *J. filiformis* L. (*Thread R.*); scapes filiform faintly striate, panicle simple of few flowers from near the middle of the scape, sepals lanceolate acuminate nearly equal larger than the roundish-obovate obtuse mucronate capsule, stamens 6. *E. B.* t. 1175.

Stony margins of lakes in Cumberland, Westmoreland, and Lancashire. Ben-Lawers, and several parts of Scotland; but we have never seen Scottish specimens. 4, 7, 8. — *Rhizome* creeping. *Plant* remarkable for its slender *scapes*, extended greatly beyond the *panicle*, its pale greenish *flowers* and short *capsules*.

** *Leaves* none. *Barren scapes* resembling leaves. *Panicle* terminal. *Flowers* aggregate. *Stamens* 6. *Seeds* with a loose coat forming an appendage at each end.

5. *J. maritimus* Sm. (*lesser sharp Sea R.*); barren scapes and outer bracteas pungent, panicle compound erect, clusters 4—8-flowered, sepals equal lanceolate acute as long as the elliptical mucronate capsule. *E. B.* t. 1725. *J. acutus β. L.*

Salt marshes in various parts of England, but not frequent. St. Andrew's; banks of the Clyde; Arran; coast of Ayrshire; Scotland. Kingstown and other places in Ireland. 4. 7, 8.—In this and the following the outer *bractea*, or portion that rises above the panicle, is broad and membranous at the base, and less like a continuation of the scape than in the species of the preceding division.

6. *J. acútus* L. (*great sharp Sea R.*); barren scapes and outer bracteas pungent, panicle very compound mostly compact, clusters 2—4-flowered, sepals equal about half as long as the broadly ovate suddenly acuminate capsule, interior 3 with a broad membranous border at the apex. *E. B.* t. 1614.

Sandy sea-shores, principally on the south and west of England and Wales. Norfolk. Wicklow and Arklow, Ireland. 4. 7.—Larger and stouter than the last, especially the *capsules*, which are of considerable size, much protruded, rich brown and glossy.

*** *Stems leafy. Leaves terete or subcompressed, and usually distinctly jointed internally. Panicle terminal. Flowers aggregate or fascicled. Seeds without an appendage at the ends.*

7. *J. acutiflorus* Ehrh. (*sharp-flowered jointed R.*); stem and leaves subcompressed, panicle very compound pyramidal, clusters 5—6-flowered, sepals unequal lanceolate very acute nearly as long as the narrow ovate subacuminate (pale brown) capsule. *Sm.* in *E. B.* t. 2143 (*ad calc.*). *J. articulatus* L.: *E. B.* t. 238.

Bogs, very common. 4. 6—8.—*Stem* 1—2 feet high, erect. *Leaves* 3—4 on a stem, distinctly nodoso-articulate when dry. *Panicle* diffuse, in fruit spreading. *Flowers* several together, greenish brown. *General bracteas* short, membranous, scarcely leafy. *Capsules* pale-coloured.

8. *J. nigritéllus* D. Don (*black-headed jointed R.*); stem and leaves somewhat terete, panicle slightly compound erect, sepals acute shorter than the linear-oblong trigonous rostrate (nearly black) capsule, interior 3 rather longer and broader. *E. B. S.* t. 2643.

Marshy spots on the mountains of Clova, Forfarshire. 4. 7, 8.—Similar to the next, but the sepals are all decidedly acute. *Capsule* at length black and glossy, larger and more suddenly pointed than in *J. lamprocarpus*, of which however we incline to think it only a variety. Indeed it is probable that both, along with *J. uliginosus*, ought to be united to *J. acutiflorus*, being chiefly distinguished from it by the outer sepals being acute.

9. *J. lamprocarpus* Ehrh. (*shining-fruited jointed R.*); stem ascending and as well as the leaves compressed, panicle repeatedly compound erect or somewhat spreading, clusters 4—

8-flowered, sepals equal shorter than the acute triquetrous oblong-lanceolate (dark brown) capsule, outer 3 acute, inner ones obtuse. *E. B. t.* 2143.

Boggy grounds and watery places, frequent. 4. 7, 8. — *Capsules* dark brown and shining.

10. *J. uliginosus* Sibth. (*lesser Bog jointed R.*); stem erect and often swollen at the base or decumbent and rooting, leaves setaceous slightly grooved faintly jointed internally, panicle nearly simple irregular, clusters few- or many-flowered, sepals equal oblong nearly as long as the elliptical very obtuse mucronate (pale brown) capsule, outer 3 acute, inner ones rather obtuse. *E. B. t.* 801. *J. bulbosus* L. *Sp. Pl.* ed. 1. *J. subverticillatus* Wulf. *J. supinus* Mærch.

Boggy and swampy places, and often partly floating in shallow water. 4. 6—8.—A highly variable plant, depending much for its appearance on soil and situation. In rather dry places the stem is often erect, with a swollen base (*J. bulbosus* L.), but sometimes the stems are spreading or procumbent (*J. subverticillatus* Wulf.); again, these procumbent stems often take root, or, when growing in water, they float and spread their long flaccid branches in all directions.

11. *J. obtusiflorus* Ehrh. (*blunt-flowered jointed R.*); stem and leaves erect terete, panicle very compound spreading and divaricate, clusters 3—6-flowered, sepals equal all obtuse about equal in length with the ovate-acute trigonous (pale brown) capsule. *E. B. t.* 2144.

Wet pastures and marshes, not unfrequent. 4. 8.

**** *Stems leafy. Leaves plane or grooved above, not distinctly jointed.*

† *Seeds with an appendage at each end.*

12. *J. castaneus* Sm. (*clustered Alpine R.*); stem terete 2—3-leaved, leaves hollow semicylindrical grooved above, heads of flowers terminal generally single sessile or peduncled shorter than the bractea, capsules ovate-oblong pointed bluntly trigonal nearly twice as long as the elliptic-lanceolate acute sepals. *E. B. t.* 900.

Rare. Elevated mountains of Breadalbane; rocks at the head of Glen Callader, in Braemar. In the county of Durham? 4. 7, 8.—“*Stem* hollow. *Leaves* with the channelled side very thin and membranous, and within are found distant transverse partitions. *Upper part* of the leaf rounded and compressed. *Sepals* 3-ribbed. *Style* breaking off at a joint. *Capsule* shining, and as well as the perianth and inner bractea of a deep chocolate colour.”—*W. Wilson.*

13. *J. trifidus* L. (*three-leaved R.*); stem 1-leaved, sheaths

fringed those of the base of the stem leafless, bracteas 2 resembling the setaceous solitary stem-leaf, heads of about three terminal flowers, capsule rounded-elliptical beaked longer than the acute sepals. *E. B. t.* 1482.

Rocky places on the Highland mountains of Scotland. *¶*. 7, 8. —Very unlike any other British *Juncus*. *Rhizome* creeping. Lower *sheaths* with at most a short awn, scarcely to be termed a leaf. A solitary *leaf* is on the stem, generally near the summit, 2—3 inches long, linear, setaceous. *Capsule* with a furrowed beak.

†† *Seeds without an appendage.*

14. *J. compréssus* Jacq. (*round-fruited R.*); stem erect more or less compressed, leaves linear-setaceous grooved, panicle terminal compound subcymose, capsules roundish-ovate or oval mucronate equal to or longer than the oval oblong obtuse incurved sepals.—*α*. panicle usually shorter than the bractea, perianth shorter than the broadly ovate shortly mucronate capsule. *J. bulbosus* L. *Sp. Pl.* ed. 2.: *E. B. t.* 934.—*β*. panicle usually longer than the bractea, perianth as long as the oval-oblong strongly mucronate capsule. *J. cœnosus* Bich.: *E. B. S. t.* 2680. *J. Gerardi* Loisel. *J. Bothnicus* Wahl.

Wet marshy places, common.—*β*. In salt-marshes. *¶*. 6—8.—Having seen various specimens of both varieties, we feel confirmed in our opinion that they are merely extremes of the same species. In Scotland it is only found in the vicinity of the sea.

15. *J. *tenuis* Willd. (*slender spreading R.*); stem above shortly dichotomous paniced, leaves linear setaceous grooved, flowers solitary unilateral approximate mostly sessile, capsules broadly elliptical obtuse mucronate shorter than the ovato-lanceolate very acuminate sepals. *J. gracilis* Sm.: *E. B. t.* 2174. *J. Gesneri* Sm. *J. Smithii* Kunth.

Moist mountains of Clova: *G. Don. ¶*. 7.—We have specimens from Don's garden at Forfar, but we doubt much if the roots were found in Clova. It is a common N. American species, and has been long in cultivation in this country and on the continent. It is allied to *J. bufonius*, yet really distinct. *Radical leaves* several; *stem* bare of leaves up to the division near the top, where is one leaf immediately beneath the foliaceous *bracteas*. In the axils of the forks are 2 or 3 large, nearly sessile *flowers*, and 2 or 3 unilateral ones on the branches. The *capsule* is very different from that of the following species.

16. *J. bufonius* L. (*Toad R.*); stem dichotomous above paniced, leaves filiform setaceous grooved, flowers solitary unilateral mostly sessile, capsules oblong obtuse much shorter than the very acuminate sepals. *E. B. t.* 802.

Frequent in moist watery places, especially such as have been overflowed in winter. ☉. 8. — *Stem* 4—6 inches high. *Leaves* few, slender, only one on the stem, generally near the middle. The divisions or ramifications of the *stem*, as they are called, belong more properly to the panicle, at the base of which are foliaceous *bracteas*. Whole plant very pale-coloured. *Flowers* green, with white membranous margins to the *sepals*.

***** *Leaves all radical. Flowers terminal.*

† *Seeds without an appendage.*

17. *J. squarrosus* L. (*Heath R.*); leaves setaceous rigid grooved, panicle terminal elongate compound, capsules elliptical-ovate. *E. B.* t. 933.

Moors and heaths, abundant. 4. 6, 7.—Whole plant exceedingly rigid, 6 inches to 1 foot high. *Leaves* subsecund, about half as long as the *scape*. *Sepals* ovato-lanceolate, glossy brown with a pale line down the middle, scariose at the edges.

18. *J. capitatus* Weigel (*capitate R.*); leaves filiform (soft) plane or grooved above, heads of flowers sessile terminal shorter than the setaceous bractea, sepals ovato-lanceolate acuminate-aristate twice as long as the truncate shortly mucronate capsule. *E. B. S.* t. 2644. *J. supinus* Bich. *J. ericetorum* β. γ. DC.

Jersey: *Mr. Hudson*. ☉. 5—7.—*Plant* 2—4 inches high, flaccid. *Leaves* entirely radical, about half the length of the *scape*, erect. *Heads* rather large in proportion to the size of the plant, of 3—6 sessile *flowers*, occasionally proliferous. *Stamens* usually 3, sometimes 6. This species is well distinguished by the setaceous inclined *bractea* (with its sheathing membranous base), which is longer than the heads of flowers, and by the acuminate-aristate *sepals*.

†† *Seeds with an appendage at each end.*

19. *J. biglumis* L. (*two-flowered R.*); leaves linear-subulate compressed (not channelled) gradually dilated into the sheathing base, flowers 2 unilateral, one of them stalked mostly shorter than the foliaceous involucre, capsule turbinate retuse rather longer than the obtuse sepals. *E. B.* t. 898.

Boggy places on the Highland mountains, not unfrequent on the Breadalbane range, but rare in other parts of Scotland. 4. 7, 8. — *Root* fibrous. *Stem* 2—4 inches high, growing not in tufts, but scattered: a much rarer species than the following, small specimens of which have often been mistaken for it. “*Leaves* with distant transverse partitions within, but not longitudinally divided:” *Mr. W. Wilson*.

20. *J. triglúmis* L. (*three-flowered R.*); leaves linear-subulate channelled bitubular their sheaths auricled above, flowers mostly 3 generally as long as the membranous bractea, capsule elliptical acute longer than the rather obtuse sepals. *E. B. t.* 899.

Boggy places among the mountains in the north of England, Wales, and especially the Highlands of Scotland. 4. 7, 8.—Mr. Benthham unites this and the last species; but Mr. W. Wilson, who had paid much attention to the two, has observed of this plant: “*Stems* several from the same root, perfectly rounded, not channelled on one side, as in *J. biglumis*, naked above, and generally with 2, and sometimes 3 leaves near the base. *Leaves* with dilated sheaths, which are auricled at the top, setaceous, channelled, *bitubular*, with transverse partitions; *radical leaves* also setaceous, more slender and longer than in *J. biglumis*. Sometimes 4 *flowers* are found together, the additional ones placed lower down and separated from the rest. *Outer bractea* sometimes as large as in *J. biglumis*: each flower has one bractea at its base. *Sepals* more membranous than in the last, narrower and more acute. *Capsule* longer than the calyx, with a tapering rather acute extremity, and with indistinctly furrowed sides; colour almost black.”

2. *LÚZULA De Cand.* Wood-rush.

Perianth of 6 sepals, glumaceous. *Filaments* glabrous. *Stigmas* 3. *Caps.* 1-celled, 3-valved; *valves* without dissepiments. *Seeds* 3, at the bottom of the capsule. (*Leaves soft, plane, generally hairy.*)—Name: the *Gramen Luzulæ* of Bauhin; and *Luzula*, Smith tells us, is altered from *lucciola*, or *luzziola*, a glow-worm; because the heads of flowers, wet with dew and sparkling by moonlight, gave some idea of those brilliant insects.

1. *L. sylvática* Bich. (*great hairy W.*); leaves hairy, panicle subcymose doubly compound, peduncles elongate of about 3 fascicled flowers, sepals aristate as long as the ovate mucronate capsule, seed minutely tubercled at the end, filaments very short. *L. maxima* DC. *Juncus sylvaticus* Huds.: *E. B. t.* 737. *J. pilosus* ð. *L.*

Woods, hilly places, and upon the mountains, frequent. 4. 5, 6. *Stem* 1—1½ foot high, woody under ground. *Leaves* broad, shining, striate. *Floral bractea*s ciliate. *Caps.* with a very sharp point, deep brown. *Seeds* elliptic-ovate, with scarcely any crested appendage on the top.

2. *L. pilósa* Willd. (*broad-leaved hairy W.*); leaves hairy, panicle subcymose but little branched spreading, peduncles 1—3-flowered bent back when in fruit, sepals acuminate rather shorter than the retuse capsule, its valves truncate, recent seeds

with a long hooked appendage at the top, filaments flattened about half the length of the anthers. *Juncus L.*: *E. B. t.* 736.

Woods, frequent. 4. 3—5.—Much smaller than the last, with the *flowers* standing singly on the *panicle*, dark brown, *Capsule* broadly ovate, contracted below the summit where it is so retuse as to appear truncate. Appendage of the seeds hooked and recurved at the point.

3. *L. Försteri* DC. (*narrow-leaved hairy W.*); leaves hairy, panicle subcymose subtended by a narrow linear bractea but little branched contracted, peduncles 1-flowered nearly all erect, sepals narrow acuminate a little longer than the acute capsule, its valves acute or acuminate, recent seeds with a straight obtuse appendage at the top, filaments compressed ascending about as long as or slightly shorter than the anther. *Juncus E. B. t.* 1293.

Groves and thickets, especially on a calcareous or gravelly soil. More common in Surrey and Isle of Wight than *L. pilosa*. About Forfar, and banks of the Doon, Ayrshire. 4. 3—6.—Much more slender than the last in every part, and taller. *Seed* with a large oblong crested appendage on the top. Intermediate between this and the last, is a plant found in the Isle of Wight, Sussex, and Herefordshire, which seems never to perfect its seeds: although larger, and in some places more abundant than either, it seems to be a hybrid; the late Dr. Bromfield named it *L. Borreri*, and, if a species, it may be characterised thus:—*Leaves* hairy; *panicle* subcymose, slightly branched, oblong, with long narrow acuminate *bracteas* at its base; *peduncles* 1—2 flowered, nearly all erect; *sepals* acuminate, much longer than the (unripe) capsule, its valves acute; *seeds* with a "straight blunt appendage or crest:" *Bromf.* Had the plant been able to perfect its seeds, we would have agreed with Mr. Bentham in uniting *L. Försteri* to *L. pilosa*.

4. *L. campestris* Willd. (*Field W.*) leaves hairy, spikes dense somewhat umbellate or contracted into a rounded lobed head, sepals acuminate longer than the obtuse apiculate capsule, seeds with a short conical stalk-like appendage at the base.—*a.* filaments about 6 times shorter than the anther, seeds nearly globose. *Juncus L.*: *E. B. t.* 672.—*β.* taller, filaments from half as long to as long as the anther, seeds twice as long as broad. *L. congesta* *Lej.*: *E. B. S. t.* 2718. *L. multiflora* *Lej.*

Woods and dry pastures, frequent; *a.* and *β.* growing together. 4. 4, 5.—*Stem* 4—8 inches, or even one foot or more high. *Flowers* collected into ovate or oblong nearly erect *spikes*, of a reddish-brown colour, sometimes very pale. In *β.* the *spikes* are often nearly all sessile.

5. *L. arcuata* Hook. (*curved Mountain W.*); leaves channelled hairy, panicle subumbellate of few 3—5-flowered heads with long drooping peduncles, bracteas membranous fringed, capsule ovato-globose apiculate shorter than the broadly lanceolate mucronate-aristate sepals, filaments as long as the anthers. *E. B. S.* t. 2688.

On the barren stony summits of the great Cairngorm range of mountains; Fonniven, and Ben More in Assynt, Sutherland; Loch-na-gar, Aberdeenshire. 2. 7.—The smallest of our *Luzula* and one of the rarest and most distinct. It comes nearer Mr. Brown's *L. hyperborea* than any other, but that wants the curved peduncles. *Seeds* without an appendage at the top, and with scarcely any at the base.

6. *L. spicata* DC. (*spiked Mountain W.*); leaves slightly channelled, spike solitary drooping compound, spikelets shorter than their subdiaphanous mucronate bracteas, sepals narrow mucronate-aristate about as long as the elliptical apiculate capsule, filaments nearly as long as the anthers. *Juncus L.*: *E. B.* t. 1176.

High mountains in the north of England, and more abundantly in Scotland. 2. 7.—*Stem* 7—8 inches high, slender. *Leaves* small, narrow, hairy only at the margins of the *sheaths*. *Spike* dark-coloured, interrupted near the base. *Capsule* shining, very dark brown. Well distinguished by its drooping compound spike and narrow leaves.

3. NARTHÉCIUM Huds. Bog-Asphodel.

Perianth coloured, of 6 linear-lanceolate, spreading, at length connivent sepals. *Stam.* woolly. *Germen* pyramidal. *Stigma* entire. *Caps.* 3-celled at the base, 3-valved. *Seeds* numerous, with an appendage at each extremity.—Named from *ναρθήξ*, a rod; probably from the elongate straight raceme of flowers. It is remarkable that this word is an anagram of *Anthericum*, a genus with which Linnæus had united it.

1. *N. ossifragum* Huds. (*Lancashire B.*); leaves linear uniform, pedicels with one bractea at the base and another above the middle, stamens much shorter than the perianth. *E. B.* t. 535.

Wet places, in moors and mountains, frequent. 2. 6—8.—*Stem* 6—8 inches high, decumbent at the base. *Rhizome* creeping. *Leaves* all radical, uniform, equitant, striate, about $\frac{1}{2}$ as long as the *scape*, which has many scales or bracteas. *Capsule* loculicidal; the *dissepiments* united at the base, and there bearing the axile *placentas*, separating upwards. Coat of *seed* chaffy, elongated into a filiform-subulate appendage to each extremity; that at the lower end resembling a very long *seed-stalk*.

** *Perianth* conspicuous; three inner or all the sepals much developed and petaloid. *Albumen* wanting. *Aquatic* or marshy plants with the nerves of the leaves longitudinal. (ORD. XCVIII. XCIX.)

ORD. XCVIII. BUTOMACEÆ Rich.

Perianth of 6 sepals, the 3 inner petaloid. *Stamens* definite or indefinite, hypogynous. *Ovaries* 6, or more, distinct, or slightly cohering at the axis or at the base. *Ovules* numerous in each cell or carpel, anatropal or rarely campulitropal. *Stigmas* as many as ovaries, simple. *Follicles* several. *Seeds* minute, numerous, attached to a reticulate placenta, covering the whole inner surface of each follicle. *Albumen* 0. *Embryo* straight with the radicle next the hilum, or very rarely curved like a horse-shoe. — *Aquatics*. Leaves very cellular. Flowers umbellate, handsome.

1. BUTOMUS Linn. Flowering-rush.

Perianth single, coloured, 6-partite, inferior. *Stamens* 9, 6 in an outer, 3 in an inner row. *Follicles* 6, rostrate, many-seeded. *Seeds* longitudinally striate. *Embryo* straight. — Named from βους, an ox, and τέμνω to cut; because the sharp leaves injure the mouths of cattle that browse upon them.

1. *B. umbellatus* L. (common F.); leaves linear-subulate trigonous, spatha of 3 leaves. E. B. t. 651.

Ditches and ponds, frequent in England and Ireland. Duddingston Loch, and Loch of Clunie, Scotland, but only where it has been planted. 4. 6, 7. — *Leaves* all radical, 2—3 feet long, linear, acuminate, acutely triangular. *Scape* longer than the leaves, terete. *Umbel* of many rose-coloured flowers, on pedicels about 4 inches long, with scariose sheathing bractæas at the base, and these having a triphyllous membranous spatha or involucre beneath them. *Style* about as long as the ovary, recurved at the apex; stigma lateral.

ORD. XCIX. ALISMACEÆ R. Brown.

Perianth of 6 sepals; 3 outer ones herbaceous, 3 inner petaloid. *Stamens* hypogynous. *Anthers* introrse. *Ovaries* several, distinct or slightly united at the base, each 1-celled. *Ovules* solitary, or 2 superposed, attached to the inner angle of the carpel, campulitropal. *Pericarps* indehiscent. *Seeds* solitary, or 2 attached to the suture at a distance from each other, erect or ascending. *Albumen* 0. *Embryo* undivided, curved like a horse-shoe. — *Aquatics*. Leaves radical on long stalks.

1. ACTINOCARPUS. Flowers perfect. Stam. 6. Carpels 6—8, spreading. each 2-seeded.
2. ALISMA. Flowers perfect. Stam. 6. Carpels numerous, each 1-seeded.
3. SAGITTARIA. Flowers monœcious. Stam. numerous. Carpels numerous, each 1-seeded.

1. ACTINOCÁRPUS *Br.* Star-fruit. Thrumwort.

Flowers perfect. *Stamens* 6. *Styles* 6—8. *Capsules* indehiseent, combined at the base, spreading in a radiated manner, 2-seeded. — Named from *ακτιν*, a ray, and *καρπος*, a fruit; in reference to its curiously radiated fruit, resembling a *star-fish*.

1. *A. Damasónium* *Br.* (common *S.* or *T.*); eapsules 6 subulate compressed opening longitudinally, leaves 5-nerved. *Alisma* *L.*: *E. B.* t. 1615. *Damasonium stellatum* *Pers.*

Ditches and pools, mostly on a gravelly soil, and chiefly in the middle and south-eastern counties of England. *4.* 6, 7. — *Leaves* radical, on long *petioles*, floating, elliptical. *Scapes* with a terminal *umbel*, generally proliferous. Inner *sepals* obcordate, white, with a yellow spot at the base. *Capsules* with two seeds upon evident stalks, one horizontal from the upper angle, the other erect from the lower angle of the axis, oblong, tubercled, and transversely striate, compressed, with a deep furrow on each side.

2. ALÍSMA *Linn.* Water-Plantain.

Flowers perfect. *Stamens* 6. *Styles* numerous. *Achenes* many in a *head*, distinct, one-seeded. — Named from *alis*, Celtic, *water*; the genus is altogether aquatic.

1. *A. Plantágo* *L.* (greater *W.*); leaves all radicle cordate-ovate or lanceolate, scape panicle with whorled compound branches, heads of fruit depressed, achenes obtuse with a small rib on the back. — *a.* leaves broader more or less ovate. *E. B.* t. 837. — *β.* leaves lanceolate tapering below. *A. lanceolata* *With.*

Near the margins of lakes, rivers, and ditches, frequent. *4.* 6—8. — *Plant* 2—3 feet high. *Leaves* on long stalks. *Scape* branched upwards; *branches* bracteate; *flowers* of a pale rose-colour.

2. *A. ranunculoídes* *L.* (lesser *W.*); leaves all radical linear-lanceolate, scape with simple branches in 1 or 2 whorls, heads of fruit globose squarrose, achenes obliquely ovate acute with 4—5 prominent ribs. — *a.* erect. *E. B.* t. 326. — *β.* procumbent, umbels rooting and leafy. *A. repens* "*Davies Welsh Bot.* 36": *E. B. S.* t. 2722.

Ditches and turfy bogs, not unfrequent in England, Scotland, and Ireland. — *β.* In lakes, North Wales. *4.* 5—9. — In general appearance allied to the preceding, especially the narrow-leaved variety of that plant, but much smaller, with larger *flowers*, which are arranged

in often prolificous *umbels*; but the essential character is in the *fruit*. The *var. β.* at first appears to be very different, having runners, and the flowers are solitary on long simple radical peduncles; but these runners are the true scapes, the umbels having taken root, and thrown out a few leaves.

3. *A. natans* L. (*floating W.*); radical leaves linear acuminate sessile, floating ones elliptical obtuse, stem floating and rooting leafy, peduncles simple from the joints of the stem, heads of fruit globose, achenes rostrate with 12—15 slender ribs. *E. B. t. 775.*

Lakes in North Wales and Cumberland. Very rare in Scotland: Black Loch, 6 miles from Stranraer. On Howth and in Connemara Ireland. 4. 7, 8.—At the base of the plant are long, linear-lanceolate, membranous *scales*, or *root-leaves* reduced to mere *petioles*. *Stem-leaves* floating, on long stalks, scarcely nerved. *Achenes* obliquely oblong, compressed at the side, with many striæ, slightly spreading, pointed with the short persistent *style*.

3. SAGITTÁRIA Linn. Arrow-head.

Monœcious. — *Barren fl.* *Stam.* numerous. — *Fertile fl.* *Styles* many. *Achenes* very numerous, distinct, collected into a *head*, 1-seeded, compressed, margined. — Named from *sagitta*, an *arrow*, on account of the shape of its leaves.

1. *S. sagittifolia* L. (*common A.*); leaves arrow-shaped, the lobes lanceolate straight, scapes simple with whorled simple short branches. *E. B. t. 84.*

Ditches and margins of rivers in England and Ireland. Near Glasgow, in various places, but scarcely indigenous. 4. 7—9.—*Flowers* white. *Leaves* truly arrow-shaped, rising above the surface of the water. *Runners* are thrown out from the base of the plant, each terminating in a tuberous rhizome.

*** *Perianth* none or inconspicuous. *Nerves of leaves* usually longitudinal. (ORD. C.—CV.)

† *Plants* sometimes, though rarely, aquatic, never (except *Sparganium natans*) submerged or floating. (ORD. C.—CIII.)

ORD. C. JUNCAGINACEÆ Rich.

Flowers perfect, lower ones are all stalked or reflexed. *Perianth* uniform, rarely none, sometimes coloured but scarcely petaloid. *Stamens* hypogynous. *Anthers* extrorse. *Ovaries* united or distinct. *Ovules* solitary or two, approximate at the base, erect, anatropal. *Styles* or *stigmas* 3—6. *Pericarps* indehiscent or 2-valved. *Albumen* 0. *Embryo* straight, with a lateral cleft for the emission of the *plumule*; *radicle* next the

hilum.—Marsh Herbs, with narrow radical leaves. Flowers spiked or racemed.

1. TRIGLOCHIN. Anthers almost sessile. Ovary 1, 3—6-celled. Flowers in a straight naked spike or raceme.
2. SCHEUCHZERIA Anthers on a slender filament. Ovaries 3. Flowers in a flexuose bracteate raceme.

1. TRIGLÓCHIN Linn. Arrow-grass.

Perianth of 6 erect, concave, deciduous sepals, 3 inner inserted a little higher than the 3 outer ones. *Stamens* 6, inserted near the base of the sepals: *anthers* almost sessile. *Ovaries* 3—6, united into one 3—6-celled. *Stigmas* 3—6, sessile, plumose. *Capsules* 3—6, 1-seeded, united by a longitudinal receptacle, from which they usually separate at the base. Flowers in a naked straight spike or raceme.—Named from *τρεις*, three, and *γλῶχιν*, a point; from the three points or valves of the capsules in the common species.

1. *T. palústre* L. (*Marsh A.*); fruit 3-celled nearly linear. *E. B.* t. 366.

Wet meadows, and by the sides of rivers and ditches in marshy situations, plentiful. γ . 6—8.—*Leaves* all radical, linear, fleshy, slightly grooved on the upper side, sheathing and membranous at the base. *Scape* 8—10 inches high, terminating in a lax, simple spike or raceme. *Flowers* small, greenish. *Capsules* 3, linear, united by a common receptacle, so as to form a solitary long 3-celled fruit, each cell separating at its base, and suspended by the extremity, containing one seed, and not dehiscent.

2. *T. marítimum* L. (*Sea-side A.*); fruit 6-celled ovate. *E. B.* t. 255.

Salt marshes, not unfrequent. γ . 5—9.—Larger than the last and stouter, differing essentially in its fructification, which is formed of 6 combined capsules, constituting a broadly ovate fruit, not separating and suspended by their summits, as in *T. palústre*.

2. SCHEUCHZÉRIA Linn. Scheuchzeria.

Perianth single, somewhat petaloid, of 6 reflexed sepals; the inner ones narrower. *Stamens* 6. *Filaments* slender. *Anthers* erect, elongate. *Ovaries* 3. *Stigmas* sessile, papillose. *Capsules* 3, inflated, 2-valved, 1—2-seeded.—Flowers racemose with a bractea at the base of their stalks. Named in honour of the three Scheuchzers, Swiss botanists.

1. *S. palústris* L. (*Marsh S.*): *E. B.* t. 1801.

Marshes, rare. Leckby Car, near Thirsk; Thorne Moor, near Doncaster; Bomere, near Shrewsbury; Wybunbury, Cheshire. Methven, near Perth. γ . 7.—*Leaves* few, semi-cylindrical, slender,

rush-like. *Scape* with large *bracteas*, terminated by a *raceme* of greenish *flowers*. *Perianth* and *stamens* reflexed. *Germens* 3, ovate, obtuse, with lateral, linear, downy *stigmas*.

ORD. CI. TYPHACEÆ Juss.

Flowers monœcious, numerous and very closely arranged upon a cylindrical or spherical *spadix* without a *spatha*. *Perianth* of 3 or more mere scales, or wanting and replaced by hairs. — *Barren fl.* *Stamens* 1—6. *Filaments* capillary, distinct or united. *Anthers* erect. — *Fertile fl.* *Ovary* solitary, 1-celled, containing one solitary pendulous *ovule*. *Style* short. *Stigma* simple, elongate, unilateral. *Fruit* somewhat dry or spongy, drupaceous, indehiscent, 1-celled, at length angular by mutual pressure. *Seed* solitary, pendulous, with a membranous skin adhering to the pericarp. *Embryo* in the axis of mealy *albumen*, straight, with a cleft on one side containing the *plumule*. *Radicle* next the *hilum*. — Herbaceous *plants*, growing in *marshes* or *ditches*. *Stems* without *nodes*. *Leaves* rigid, *ensiform*, with *parallel veins*.

1. TYPHA. Spadix cylindrical.

2. SPARGANIUM. Spadix spherical.

1. TYPHA Linn. Cat's-tail. Reed-mace.

Spadix cylindrical. *Perianth* 0, except hairs. — *Barren fl.* *Stam.* 1, or 2—6 and monadelphous, surrounded at the base with 3 or more hairs (sterile filaments?): *anthers* somewhat wedge-shaped. — *Fertile fl.* *Pericarp* stalked; the stalk with hairs, either whorled or at its base (sterile filaments?). — Name: τυφή, from τιπος, a marsh; where these plants grow.

1. T. latifolia L. (great R.); leaves linear nearly plane glaucous, sterile and fertile spikes contiguous, both cylindrical. E. B. t. 1455.

Borders of ponds and lakes. 4. 7, 8. — *Stems* 3—6 feet high. *Leaves* very long, sometimes nearly an inch broad. *Spikes* very long, close together; fertile one greenish-brown; sterile one yellow, with one or two large membranous *bracteas*.

2. T. angustifolia L. (lesser R.); leaves linear grooved below green, sterile and fertile spikes a little distant from each other both cylindrical. E. B. t. 1456.

Pools and ditches, less frequent than the preceding. About London; not uncommon in the E. of England, as Norfolk, Suffolk, and Essex. Loch of Lindores, Fife; Lochmaben, Dumfriesshire; Colvend, Kirkcudbright. 4. 7. — Smaller than the last, with much narrower leaves and catkins.

[3. T. *minor Sm. (dwarf R.); leaves linear setaceous,

barren and fertile spikes distant or contiguous the latter elliptical. *E. B. t.* 1457. *T. minima Willd.* *T. angustifolia* *β. L.*

Said, by Dillenius, to have been found by Mr. Dandridge on Hounslow Heath. *4. 7.*]

2. SPARGANIUM Linn. Bur-reed.

Spadix spherical. *Perianth* of 3—6 scales, which are broader upwards (sterile stamens?). — *Barren fl.* *Stamens* 3, distinct, or nearly so: *anthers* ovate. — *Fertile fl.* *Pericarp* without hairs at the base. — Name: *σπαργάνον*, a little band; from its narrow and long leaves.

1. *S. ramósum* Huds. (*branched B.*); leaves triangular at the base their sides concave, common flower-stalk branched, stigma linear, fruit sessile. *E. B. t.* 744. *S. erectum L.*

Banks of ditches, lakes, and stagnant waters. *4. 7.* — *Stem* 2 feet and more high, with a few long, sword-shaped leaves or bracteas, having broad membranous sheathing bases on the upper or branching part. *Root-leaves* very long, linear, ensiform, triangular at the base, their sides concave. *Lower branches* of the inflorescence with several rather distant heads, of which 1—3 of the lower ones are composed of fertile, the others of sterile flowers.

2. *S. simplex* Huds. (*unbranched upright B.*); leaves triangular at the base their sides flat, common flower-stalk nearly simple, stigma linear, fruit subsessile. *E. B. t.* 745. *S. erectum β. L.*

Ditches and stagnant waters, especially in a gravelly soil. *4. 7.* — Much smaller than the last. Common flower-stalk rarely, if at all, branched, the branches or partial flower-stalks bearing only a single head of fertile flowers; the other fertile heads and all the sterile ones are sessile. The sides of the leaves are plane, not concave or grooved; the flowers pale yellow.

3. *S. nátans* L. (*floating B.*); stem flaccid, leaves floating, common flower-stalk simple, fruit with a long beak stalked, heads of sterile flowers several. *Fries Summ.* p. 560. *S. affine Schn.*

Lakes. Island of North Uist, and Galloway, Scotland. Snowdon, Wales. Connemara, Ireland. *4. 8.* — Of this we have seen no specimens. *Fries* says the fruit is furnished with a long stipes, which seems to be formed by a contraction of its lower half. This appears principally to differ from the rest by the fruit being more attenuate at both extremities.

4. *S. mínum* Bauh. (*small B.*); stem flaccid, leaves floating plane, common flower-stalk simple, stigma oblong, fruit with a short beak sessile, head of sterile flowers solitary. *S. natans Sm.: E. B. t.* 273.

Lakes, ditches, and stagnant waters; abundant in the north. 4.
7. — *Leaves* very long, linear, pellucid.

ORD. CII. ARACEÆ Juss.

Flowers monœcious, numerous, collected upon a *spadix*, which is generally enclosed within a 1-leaved *spatha*; barren and fertile ones usually on different parts of the *spadix*, sometimes intermingled. *Perianth* wanting. *Stamens* usually indefinite. *Anthers* turned outwards, nearly sessile or on flat *filaments*, usually 2-celled, sometimes 1-celled, sometimes 4- or many-celled two or more being united. — *Fertile fl.* *Ovary* free, with 1 or rarely more cells, sessile, solitary or aggregate. *Ovules* solitary or several together, erect, horizontal, or pendulous. *Stigma* sessile or nearly so. *Fruit* succulent. *Seeds* pulpy. *Embryo* in the axis of fleshy or mealy (rarely without) *albumen*, straight, with a cleft on its side for the emission of the *plumule*. *Radicle* usually at the opposite extremity from the *hilum*, rarely pointing to it.—*Leaves sheathing at the base, convolute in æstivation, sometimes compound, often cordate, usually with branching veins.*—Acrid and poisonous; but if the juice is dissipated by heat, or extracted by pressure, the leaves and roots become esculent; and the feeula of the latter is capable of being converted into excellent bread. Thus the *Colocasia esculenta*, and its allied species, are abundantly eaten in warm countries.

1. A'RUM Linn. Cuckoo-pint.

Spatha convolute at the base. *Spadix* with the fertile flowers at the base. *Stam.* (sessile) near the middle of the *spadix*, which is naked above. *Ovules* 2—6 in each *carpel*, horizontal. *Stigma* sessile, somewhat excentric. *Berry* with 1 cell and 1 or few *seeds*. *Embryo* at the opposite extremity of the seed from the *hilum*.—Name: *apor*, in Greek, probably from *ar* or *aur*, in Hebrew and various old languages, denoting *fire*; on account of the fiery or acrid taste.

1. *A. maculatum* L. (*Cuckoo-pint*, *Wake-Robin*, or *Lords-and-Ladies*); leaves all radical cordato-hastate or sagittate, lobes acute or obtuse, *spadix* club-shaped obtuse, shorter than the *spatha*. *E. B. t.* 1298. *A. Italicum* Hamb. .

Groves and hedges, frequent in England; rare in Scotland and Ireland. 4. 4, 5.—The *rhizome* affords an abundant amylaceous substance. *Leaves* large, shining, often spotted with purple; or sometimes, in the Isle of Wight, marked with white veins, when it has been mistaken for the *A. Italicum* Mill., which has the *spatha* large, flat above, and recurved at the end. Mr. Babington, in his "Manual" (ed. 4), has described the true *A. Italicum*, but surely not

from British specimens. *Spatha* large, convolute; its margins incurved. Above the *carpels*, on the *spadix*, is a ring or circle of 2-celled, sessile *anthers*, and above them another ring of apparently imperfect *carpels*. The extremity of the *spadix* is purplish. *Berries* bright scarlet, persistent during winter, after the leaves and *spadix* have decayed, crowded into a short spike.

ORD. CIII. ORONTIACEÆ *R. Brown: Lindl.*

Flowers perfect, crowded on a simple thick *spadix*, usually furnished with a *spatha*. *Perianth* of 4—8 scales. *Stamens* hypogynous or perigynous, of the same number as the scales of the *perianth*. *Filaments* flattened or filiform. *Anthers* 2-celled, opening longitudinally or transversely. *Ovary* free, with 1 or more cells. *Ovules* erect or pendulous. *Style* wanting or subulate. *Stigma* capitate. *Fruit* baccate. *Embryo* slit on one side, usually in the axis of *albumen*. — Herbaceous plants, with broad, entire or deeply divided, never floating leaves which are sometimes sword-shaped and equitant.

1. *A'corus* Linn. Sweet-Flag.

Flowers arranged upon a sessile *spadix*. *Spatha* a mere continuation of the scape and similar to the leaves (not convolute). *Perianth* of 6 persistent scales. *Ovary* 3-celled. *Stigma* sessile. *Fruit* baccate, indehiscent, few-seeded. — Name: *ακορος*, probably from *a*, out, and *κορον*, or *κορη*, the pupil of the eye; the diseases of which it was supposed to remove.

1. *A. Calamus* L. (common *S.*): scape ancipitate prolonged into a leaf above the *spadix*. *E. B. t.* 356.

Watery places on the banks of rivers, in the middle and south-east of England, abundant in Norfolk and Suffolk. Rare if truly indigenous in Scotland; water of Girvan, near the town, and bog of Culzean near Maybole, Ayrshire; Castle Semple Loch, Renfrewshire. γ . 6. — *Rhizome* aromatic. *Scape*, like the leaves, ensiform-ancipitate.

†† *Submerged or floating plants.* (ORD. CIV. CV.)

ORD. CIV. PISTIACEÆ Rich.

Perianth 0. *Flowers* 2, monœcious, enclosed in a *spatha*, but not borne on a *spadix*. — *Sterile fl.* solitary. *Stamens* 1—2 and distinct, or the *filaments* united, thick, and bearing 3—8 *anthers*. — *Fertile fl.* solitary. *Ovary* 1-celled, with 1 or more erect or horizontal *ovules*. *Style* short. *Stigma* simple. *Fruit* somewhat membranous and indehiscent, or bursting transversely, or baccate, 1- or more-seeded. *Seeds* with a coriaceous thick ribbed skin, and a thickened indurated *foramen*.

Embryo either in the axis of a fleshy *albumen* and having a lateral cleft for the emission of the *plumule*, or at the apex of the *nucleus*.—Floating *frondose plants*, minute and usually *lenticular*, or with large lobed fronds.

1. LÉMNA Linn. Duckweed.

Spatha membranous, urceolate. *Stam.* 1—2, distinct, each bearing a 2-celled didymous *anther* (the cells bilocular?) *Fruit* utricular.—Fronds *without distinct stem or leaves*, floating on the surface of the water, and increasing, not only by seeds, but, far more abundantly, by gemmæ or buds, concealed in lateral clefts of the parent frond, which, growing out on 2 opposite sides into new plants, and these again producing offspring in the same way, while still attached to their parent, present a remarkable appearance.—Name: *λεμνα*, of the Greeks, it is said from *λεπις*, a scale.

1. *L. trisúlca* L. (*Ivy-leaved D.*); fronds thin elliptico-lanceolate caudate at one extremity serrate at the other, roots solitary. *E. B.* t. 926.

Clear stagnant waters. Less frequent in Scotland than in England. ☉. 6, 7.—Fronds $\frac{1}{2}$ — $\frac{3}{4}$ of an inch in length, pellucid at the margins, reticulate. Roots solitary, calyptrate at the extremity, as in most of the genus. *Stamens* 2. *Ovary* with a single ovule. *Seed* solitary, transverse, attached by a short stalk to the bottom of the *utricle*.

2. *L. mínor* L. (*lesser D.*); fronds nearly ovate compressed, roots solitary. *E. B.* t. 1095.

Stagnant waters, common. ☉. 7.—About a line or a line and a half long, of a rather thick and succulent, but compact texture, slightly convex beneath. The young fronds constitute the *Lemna arrhiza* of the French authors. *Stamens* 2. *Ovary* 1-ovuled. The *utricle* is single-seeded; *seed* transverse, with its *hilum* “directed towards the narrow end of the frond:” *Wilson*.

3. *L. polyrrhíza* L. (*greater D.*); fronds obovato-rotundate compressed, roots numerous from the same point. *E. B.* t. 2458. *Spirodela Schleid*.

Stagnant waters. Rare in Scotland: near Glasgow. ☉. *Flowers* unknown in Britain.—The largest of all the species, half an inch long and nearly as broad, succulent, firm, faintly striate, a little convex below, where, and at the margin above, the frond is of a deep purple colour. Spiral vessels are conspicuous throughout the whole plant; but in all the other species there are either none, or they are evanescent. *Stamens* 2; *filaments* tapering below. *Ovary* with 2 erect ovules. The mature fruit of this species has not been observed.

4. *L. gíbba* L. (*gibbous D.*); fronds obovate nearly plane

above, hemispherical beneath, roots solitary. *E. B.* t. 1233. *Telmatophace Schleid.*

Stagnant water, but not very frequent. Rare in Scotland. ☉. 6—9.—Size of *L. minor*, but readily distinguished by its gibbous or even hemispherical lower surface, which is, moreover, white, pellucid, and beautifully cellular, upper side plane, green, opaque. *Stamens* 2. *Ovary* with 2—7 erect *ovules*. *Utricle* at length bursting transversely. *Seeds* usually 2—4, rarely more, or solitary, erect.

ORD. CV. NAIADACEÆ *Juss.*

Flowers perfect¹ and all sessile, or imperfect and monœcious or diœcious. *Perianth*? of the *perfect fl.* of 3—4 wedge-shaped or unguiculate scales, or wanting; of the imperfect ones usually wanting, sometimes of 1—2 scales. *Stamens* definite, hypogynous. *Anthers* 1—2-celled. *Ovaries* solitary or several, 1-celled. *Ovules* usually solitary, erect or pendulous, rarely 3 and erect. *Style* simple, or more or less deeply 2—3-cleft. *Pericarps* dry, indehiscent, 1-celled, 1- (or rarely 2-) seeded. *Embryo* without *albumen*, with a thin skin, having a lateral cleft for the emission of the *plumule*, straight or curved. *Radicle* large. *Submerged or floating* aquatics, with *very cellular* leaves and stems. *Flowers inconspicuous, sometimes spiked.*

1. POTAMOGETON. *Flowers* perfect. *Perianth* of 4 unguiculate sepals. *Stamens* 4. *Anthers* subsessile. *Carpels* 4, sessile. *Stigma* nearly sessile, entire.
2. RUPPIA. *Flowers* perfect. *Perianth* 0. *Stamens* 4. *Anthers* sessile. *Carpels* 4, on long stalks. *Stigma* sessile, entire.
3. ZANNICHELLIA. *Flowers* imperfect, axillary. *Stamen* 1. *Anther* on an elongated filament. *Carpels* 4 or more, sessile or on a stalk not longer than the achene. *Style* evident, entire. *Stigma* discoid.
4. NAÏAS. *Flowers* imperfect, axillary, solitary. *Carpels*, solitary, sessile. *Style* with 2—4 elongated stigmas.
5. ZOSTERA. *Flowers* imperfect, arranged on a flat spadix within a foliaceous spatha. *Carpels* sessile. *Style* with 2 elongated stigmas.

* *Pollen* globose or oblong. *Plants* growing in fresh water, rarely in salt marshes. (Gen. 1—4.)

1. POTAMOGETON *Linn.* Pond-weed.

Flowers perfect, sessile, upon a *spike* (or *spadix*?) which issues from a sheathing *bractea* (or *spatha*?). *Perianth* single, of

¹ Dr. Lindley limits this Order to those genera which have imperfect flowers, and removes *Ruppia*, *Potamogeton*, *Aponogeton*, and *Ouviranda* to the *Juncaginaceæ*. According, however, to the views of DeCaisne, Kunth, and some others, the supposed sepals of these genera are merely bracteas, each stamen and carpel being a distinct flower; so that these plants have really all imperfect flowers, and are properly placed here. The perianth, if such it be, is sessile, on a kind of spadix or thickish peduncle: in the true *Juncaginaceæ* the lower flowers at least are stalked, thus obviating the ambiguity about the perianth or their being truly perfect.

4 unguiculate scales. *Stamens* 4. *Anthers* 2-celled nearly sessile, opposite the scales of the perianth. *Pistils* 4, which become 4 sessile *achenes*. *Stigmas* nearly sessile, undivided. — Named from ποταμός, a river, and γειτῶν, a neighbour; all the species grow in the water. Chamisso and Schlechtendal have well illustrated this genus. (See *Linnæa*, ii. p. 159.)

* *Leaves all opposite and submerged; stipules none.*

1. *P. dénsus* L. (*opposite-leaved P.*); leaves crowded all opposite pellucid amplexicaul ovate-acuminate or lanceolate, spikes shortly stalked about 4-flowered finally reflexed. *E. B.* t. 397.

Ditches, frequent. 4. 6, 7. — *Peduncles* short. *Head of flowers* small, globose. *Leaves* keeled below, middle nerve or rib of many longitudinal cells, with 2 and sometimes 3 lateral parallel veins on each side, the inner one the strongest.

** *Leaves alternate, all submerged, with adnate stipules.*

2. *P. pectinatus* L. (*Fennel-leaved P.*); leaves distichous setaceous or linear sheathing by means of their adnate stipules, upper ones 1—3-nerved, spike interrupted, achenes large 3-ribbed at the back, the two lateral ribs sometimes obsolete. — *a.* leaves setaceous 1-nerved canaliculate, achenes with the lateral keels conspicuous. *E. B.* t. 323. *P. marinus* L. — *β.* leaves broader, upper ones 3-nerved, lower 5-nerved, achenes with the lateral keels inconspicuous. *P. pectinatus* var. *vulgaris* Ch. et Schl. *P. flabellatus* Bab.

Rivers, lakes, ponds, and salt marshes. Near Ayr, Scotland. — *B.* Denver and Burnham, Norfolk; Coventry; Bath; Gravesend; Hull; Yarmouth. 4. 6, 7. — *P. flabellatus* Bab. appears to us to be what Chamisso and Schlechtendal consider the common form of the species.

3. *P. filifórmis* Pers. (*slender-leaved P.*); leaves distichous setaceous 1-nerved sheathing by means of their adnate stipules, spike interrupted, achenes (small) convex but not ribbed on the back. *Cham. et Schlecht. l. c.* p. 167.

Lakes and ponds in Forfarshire and Berwickshire. 4. 6, 7. — So similar to our var. *a.* of the last that we know no distinguishing character except the smaller flowers and fruit, and the achenes being quite convex on the back after the cuticle has been removed: when this is not removed, they sometimes appear 3-ribbed externally. Kunth (*En.* iii. p. 136) and Mr. Benthams unite them.

*** *Leaves alternate, linear, all submerged; stipules free.*

4. *P. trichoídes* Cham. (*hair-like P.*); leaves sub-setaceous, 1-nerved finely pointed, peduncles elongate, spike at length

somewhat lax, stem capillary nearly terete. *Ch. et Schlecht. l. c. p. 175.*

Ponds and ditches at Bexley near Norwich. 4. 7, 8. — We have seen no British specimens, nor are we at all satisfied that the foreign ones are specifically distinct from the next species, with which Kunth also is inclined to unite them. The fruit has an obscure tooth on the ventral suture near the base, which has not been observed in *P. pusillus*. Mr. Bentham considers all of this section to form only one natural species, which he calls *P. pusillus*, a name however not very applicable to some of the forms.

[Mr. Babington mentions a plant found near Dunstanburg, Northumberland, that he supposes to be *P. gracilis* Fr., "which has 1-nerved attenuate-cuspidate leaves, terete stems, and globose-elliptical fruit without a keel." We have seen no specimens. *P. gracilis* Fr. is however reduced by Reichenbach (Ic. Fl. Germ. vii. p. 14, n. 39) to the next species, of which he considers it a variety with very narrow 1-nerved leaves.]

5. *P. pusillus* L. (*small P.*); leaves narrow-linear 3—5-nerved with obscure connecting veins, peduncles 2—3 times longer than the somewhat lax spike, stem slightly compressed. — *a.* leaves 3-nerved, nerves in the middle between the midrib and the margin. *E. B. t. 215.* — *β.* leaves broader with an accessory nerve on each side between the margin and the primary lateral ones. *P. compressus* L.: *E. B. t. 418.*

Ditches and still waters. 4. 6, 7. — The leaves are more or less acute; the spikes oblong, compact or a little interrupted. We quite agree with Chamisso and Schlechtendal, who unite *P. compressus* with *P. pusillus*.

6. *P. gramineus* L. (*grassy P.*); leaves broadly linear obtuse 3-nerved with few and obscure connecting veins, peduncle scarcely longer than the oblong oval dense spike, stem slightly compressed. *E. B. t. 2253.* *P. obtusifolius* Mert. et Koch.

Ponds and ditches. Amberley, Sussex; Orford, near Warrington, Lancashire; Arbury Hall, Warwickshire; Deptford; Norwich; Castle-Howard and Beverley, Yorkshire. Possil marsh, near Glasgow; Kincardineshire. 4. 7. — Nearly allied to the last, but stouter, darker-coloured, and with short peduncles, scarcely longer than the stipule of the leaf from the axil of which they spring. The middle nerve or rib is accompanied by many parallel oblong reticulations both in this and the last species; but there are none of the numerous longitudinal parallel intermediate nerves seen in the two following. Occasionally the peduncles are nearly twice the length of the spike, when it becomes very difficult to distinguish this from *var. β.* of the last species, with which it agrees in general appearance; but we believe that the latter has always the two supplementary nerves, whereas *P. gramineus* has the leaves only 3-nerved. Judging from the specimens we have seen in herbaria, *P. gramineus* is more common than *P. pusillus β.*, while *P. pusillus a.* is more common than either of the others.

7. *P. acutifolius* Link (*sharp-leaved P.*); stem compressed, leaves linear acuminate with 3 principal and numerous close parallel intermediate nerves occupying the whole surface, spikes oval compact about equal in length to the short peduncle. *E. B. S. t.* 2609.

Rare? Marsh-ditches at Amberley, Henfield, and Lewes, Sussex; Norfolk; Hertfordshire. 4. 7.—The numerous closely placed parallel nerves well distinguish this and the following species from their congeners.

8. *P. zosteræfolius* Schum. (*Grass-wrack-like P.*); stems compressed, leaves broadly linear acute with 3 principal and numerous close parallel intermediate nerves occupying the whole surface, spikes cylindrical upon long peduncles. *E. B. S. t.* 2685. *P. cuspidatus* Schrad.

Rare? Rivulet at Hovingham, Yorkshire; River Sow, at Stafford. Lakes of Rescobie and Forfar. 4. 7.—Larger than the last, with peduncles 2—4 inches long, and spikes cylindrical, sometimes an inch in length. Mr. H. C. Watson states that he has specimens from various other counties in England, but he gives no stations; it seems to be a species very local in each district.

**** *Leaves alternate, ovate, lanceolate; or oblong, all pellucid and submerged; stipules free.*

9. *P. crispus* L. (*curly P.*); stem compressed, leaves lanceolate waved and serrate 3-nerved sessile, fruit beaked. *E. B. t.* 1012.

Ditches and rivers, frequent. 4. 6, 7.—Peduncles elongated, not thickened upwards.

10. *P. perfoliatus* L. (*perfoliate P.*); stem terete, leaves cordate-ovate sessile and amplexicaul 7-nerved with smaller intermediate nerves. *E. B. t.* 168.

Ditches and lakes, frequent. 4. 7.—Peduncles rather short, thick, not swollen upwards. Spikes oblong-ovate.

11. *P. prælongus* Wulf. (*long-stalked P.*); leaves entire narrow-oblong semiamplexicaul obtuse and cymbiform at the end, with 3 principal and several lesser parallel nerves arising from the base connected by reticulations, stipules not winged, peduncles elongated, scarcely thickened upwards, spikes cylindrical many-flowered. *E. B. S. t.* 2858.

Lakes and pools. Ditch by Caversham bridge, near Reading; River Sow, at Stafford; Rydal Water, Westmoreland; Malham, Yorkshire, and several other of the eastern counties of England; Berwickshire; Moss of Litie, Nairnshire; Lochleven, Kinross-shire. 4. 7.—This is best distinguished by its oblong leaves, nerved from the base, where they are semiamplexicaul, and by the lengthened peduncle, which is sometimes slightly thickened upwards. In size it

almost equals *P. lucens*. Stipules large, lower ones sometimes 3 inches long, white, tinged with red, not green, and without the crests or wings observable in the two next.

12. *P. longifolius* Gay ? (*long-leaved P.*); leaves entire all elongato-lanceolate nearly sessile but attenuate below apiculate and flat at the end with several longitudinal fine nerves springing from the prominent mid-rib connected by transverse veins, stipules winged, peduncles very long thickened upwards, spikes with a few subverticillate distant flowers. *E. B. S. t.* 2847.

Lough Corrib, Galway, Ireland. 2. 7, 8.—“Nearly allied to *P. praelongus*, but has not the amplexicaul and hood-tipped leaves of that plant:” *Bab.* What the Irish plant may prove to be, when found in other localities, it is impossible to say. The foreign and true species of the same name has the leaves often suddenly acuminate, with sometimes a long point, and the spikes are cylindrical and densely flowered, as in *P. lucens*, from some forms of which it does not appear to differ; Chamisso and Schlechtendal, indeed, unite the two; and even Reichenbach (*Ic. Fl. Germ. vii. p. 25*), although he figures them as distinct, seems to admit that *P. longifolius* is sometimes only to be distinguished by its longer and thinner bright green finally blackening leaves (not yellowish green or olive, as in *P. lucens*), which have a thicker midrib and finer reticulation. Mr. Benthham also unites the Irish plant to *P. lucens*, along with *P. lanceolatus* and *P. rufescens*, while he retains *P. heterophyllus* as a distinct species.

13. *P. lucens* L. (*shining P.*); leaves stalked minutely denticulate elliptic-lanceolate flat at the end mucronate or suddenly acuminate with sometimes a long point with several longitudinal nerves springing from the prominent midrib connected by transverse veins, stipules winged, peduncles elongated thickened upwards cylindrical many-flowered. *E. B. t.* 376.

Lakes, pools, and streams, common. 2. 6, 7.—The largest of our species, and very beautiful in the reticulation of its leaves. Stipules large, with two prominent wings or crests at the back, as in the last species. Upper leaves smaller than the lower ones, and all suddenly contracted towards the point. Coriaceous leaves are very rare; these are ovato-lanceolate, moderately acute, and less evidently stalked than in *P. heterophyllus*; Chamisso and Schlechtendal place it along with those species which have sometimes floating and coriaceous leaves, and change its name to *P. Proteus*, considering *P. heterophyllus* a variety of it. The decidedly stalked floating leaves of this last appear to indicate a distinction, but aquatic plants of all kinds are extremely liable to vary according to their place of growth.

***** Leaves alternate, upper ones floating, broader than the others. Stipules free.

14. *P. heterophyllus* Schreb. (*various-leaved P.*); submerged leaves sessile lanceolate attenuate at both ends apiculate denti-

culate or entire membranous, floating ones elliptical stalked slightly coriaceous, stipules strongly ribbed, peduncles thickened upwards. *E. B. t.* 1285.

Pools and ditches, in various parts of the country. 2. 6, 7.—*Mr. Wilson* finds this sometimes without floating leaves, when it seems intermediate between *P. lanceolatus* and *P. rufescens*. “The stipules, which are not dorsally winged, are short and broad, yet with 2 stout principal ribs, ovate and blunt; both they, and the leaves subtending the flower-stalk, are widely spreading. Leaves distantly inserted on the stem; upper ones considerably larger than the rest.—Distinguished by these marks, and the clavate flower-stalk from *P. rufescens* and *lanceolatus*.” *Wilson*. *Wahlenberg*, *Hartmann*, and *Fries* are of opinion that this is the true *P. gramineus* of *Linnaeus*; but *Linnaeus* adopted that name from *Ray*, and *Ray*’s *P. gramineus* is the species commonly so called in this country.

[Between this and the next species *Mr. Babington* introduces *P. sparganiifolius* *Laest.* ? found in the river at *Maum*, *Galway*: “submerged leaves linear narrowed at both ends very long sessile entire apiculate with many parallel veins next the midrib, floating leaves subcoriaceous lanceolate long-stalked (often wanting), stipules very long not winged.” With this we are quite unacquainted. Aquatics appear to be subject to much greater variation in appearance and structure than is generally supposed, so that the differential characters assigned are often the result of locality, and what are supposed new intermediate species are merely intermediate forms uniting those formerly recognized.]

15. *P. lanceolatus* *Sm.* (*lanceolate P.*); submerged leaves lanceolate “not apiculate,” tapering at the base entire membranous with about 5—7 nerves connected by transverse veins, floating leaves elliptic-lanceolate subcoriaceous many-nerved petiolate sometimes wanting, peduncle about as long as the leaves not thickened upwards, spikes elliptical. *E. B. t.* 1285.

Pools and ditches. Anglesey. Angus-shire; Kincardineshire; Elgin. 2. 7.—*Floating leaves* are always found where the current is slow. “Small chain-like reticulations are distinguishable near the midrib on the submerged leaves, but not on the floating leaves, which are elegantly overspread by them.” *Wilson*. The portion of chain-like reticulations increases gradually upwards. The difficulty is to distinguish this plant from *P. heterophyllus*, than which, however, it is much smaller and more delicate in all its parts.

16. *P. rufescens* *Schrad.* (*reddish P.*); submerged leaves lanceolate attenuate at both ends “not apiculate” entire membranous many-nerved with connecting veins and many linear reticulations at the midrib, floating ones subcoriaceous oblong or obovate rather longer than their stalks, stipules not winged, peduncles not thickened upwards. *P. fluitans Sm.*: *E. B. t.* 1286.

Ditches and slow streams, in many parts of England. Anglesea. Near Glasgow and Forfar; in the Gady at Premnay, and Aberdeen canal, Aberdeenshire. 4. 7.—This in some situations much resembles *P. lucens*. Coriaceous floating leaves nearly as acute as the lower ones, differing only in their firmer texture and in being stalked; lateral ribs or nerves not separate to the base of the leaf, arising from various parts of the central rib, and from 6—7 in number on each side, 2 of them more evident than the rest; flower-stalk not thickened upwards: *Wilson*. The plant is remarkable for its reddish-olive colour, and is perhaps better known by its general aspect, size, and hue, than by any character that can be applied to it.

17. *P. plantaginæus* Ducr. (*Plantain-leaved P.*); leaves all membranous stalked, lower ones oblong, upper elliptical, achenes minute obliquely ovate convex on the back when recent acutely keeled when dry, spike slender cylindrical densely flowered, peduncle long not thickened upwards. *E. B. S. t.* 2848. *P. coloratus* Horn.: *Cham. et Schl. l. c.* p. 194.

Deep peaty pits and ditches, probably far from rare in England. Oban; Ferneyrig Loch, Berwickshire. 4. 6, 7.—Distinguished from *P. natans* by its beautifully diaphanous reticulate leaves, none of which are coriaceous, and its much smaller fruit. It is more allied to *P. oblongus*, from which, according to Mr. Babington, its leaves, as well as the acutely keeled back of the fruit when dry, clearly distinguish it. These characters, however, seem to be of little importance: Mr. Bentham unites it along with the next to *P. natans*.

18. *P. oblongus* Viv. (*oblong-leaved P.*); "leaves all stalked, upper ones coriaceous floating oblong-elliptical, lower linear-lanceolate, achenes minute with their back always obtuse and rounded, spike slender cylindrical densely flowered upon a long terete peduncle." *Bab*: in *E. B. S. t.* 2849. *P. natans* ϵ . *Mert. et Koch*. *P. polygonifolius* Pourr.: *Bab*.

"Far from uncommon, in wet ditches, small streams, ponds, and bogs." Frequent in Scotland. 4. 7.—"It is distinguished from *P. natans*, with which most botanists probably confound it, by the form and size of its fruit, as well as by other characters:" *Bab*. We fear the above characters are not constant, for we have examined specimens where the achenes were decidedly marked on the back with 3 ridges, the middle one being acute. It is found usually in bogs and ditches almost dry in summer, which may explain why the fruit is not above half the size of that of the next species.

19. *P. natans* L. (*sharp-fruited broad-leaved P.*); lower leaves linear submembranous or wanting, upper elliptical coriaceous floating on long stalks many-nerved distinctly cellular, fruit (large) keeled at the back. *E. B. t.* 1822.

Stagnant waters and slow streams, frequent. 4. 6, 7.—Very variable in general size, and in the shape of its floating leaves, which are more or less elongated, sometimes linear-lanceolate, obtuse at the

base, or decurrent on the foot-stalks. The lower leaves appear to differ from the submerged leaves of all the others, except *P. oblongus*, in having their substance composed of the same small, but distinct, cells or reticulations as the floating ones. These submerged leaves are frequently wholly wanting, especially when the plant grows in very shallow water.

2. RÚPPIA Linn. Ruppia. Tassel-Pondweed.

Flowers perfect, about 2 on a spike (or *spadix*?) arising from the sheathing bases of the leaves, which perform the office of a *spatha*. Perianth 0. Stam. 4. Anthers 1-celled, sessile. Stigmas sessile, undivided. Achenes 4, on long stalks. — Named after Henry Bernard Ruppia, author, in 1718, of *Flora Jenensis*.

1. *R. marítima* L. (*Sea R.* or *T.*): *E. B. t.* 136: *Hook. in Fl. Lond. t.* 50. — α . peduncles elongated, leaves broader, sheaths inflated. — β . peduncles shorter, leaves narrow, sheaths small close. *R. rostellata* Koch.

Salt-water pools and ditches. 4. 7, 8. — Stems slender, filiform, flexuose, branched, leafy. Leaves linear, setaceous. *Spadix* at first very short, included in the sheath or *spatha*, with 2 green flowers one above another on opposite sides, and quite destitute of perianth. Anthers large, sessile, bursting horizontally, 1-celled. Mertens and Koch say that each pair forms the 2 cells of 1 anther; and that there are in reality but 2 sessile stamens. Pollen a tube, with 3 globules, 1 in the middle and 1 at each end of the tube. At the time of flowering the *spadix* lengthens remarkably, to the height of 5 or 6 inches or more, and becomes spirally twisted. When the germen swell, their base is elongated into a footstalk, one or two inches long; each then becomes an oblique, ovate, acuminate, fleshy achene or drupe. This drupe is sometimes more beaked than at other times, and the sheaths of the leaves are occasionally but little dilated: then the plant becomes *R. rostellata* Koch, and this is the more common state of the plant with us. In *R. marítima* the anthers (anther-cells, Koch) are said to be oblong, $1\frac{1}{2}$ times longer than broad, in *R. rostellata* nearly round or subquadrate.

3. ZANNICHÉLLIA Linn. Horned Pond-weed.

Flowers monœcious. — Barren fl. Perianth none. Stam 1. Filament elongated. Anthers 2—4-celled. — Fertile fl. Perianth single, of 1 scale. Germen 4 or more. Style evident, undivided. Stigma peltate. Achenes sessile or shortly stalked. — Named in honour of John Jerome Zannichelli, a Venetian apothecary and botanist.

1. *Z. palústris* L. (common H.): *E. B. t.* 1844.

Ditches and stagnant waters. ☉. 5—8. — Floating. Stems long, filiform branched. Leaves opposite, linear, entire, sometimes emarginate at the point. Flowers axillary, from a membranous bractea.

Fert. fl. upon a very short pedicel, from the base of which arises a single *stamen* composed of a long white filament and one *anther* with 2—4 cells. *Style* usually half as long as the fruit, sometimes 6 times shorter (*Z. polycarpa* Nolte), sometimes as long (*Z. pedicellata* Fr.), or longer (as from the north of India). Length of the *stalk* of the fruit usually in proportion to that of the style. *Achenes* sometimes smooth, sometimes with a crenate or toothed ridge at the back. *Stigma* entire or crenulate. This has been divided into several species or varieties in various ways, according as an author considered the style, stigma, fruit or its stalk, to yield the best characters. See Reichenbach Pl. Crit. viii. f. 1003—1006, and Ic. Fl. Germ. vii. p. 9. t. 16; Steinhil in Ann. Sc. Nat. ser. 2. ix. p. 87; and Wilson in Comp. Bot. Mag. i. p. 191.

4. *NAIAS* Linn. *Naias*.

Flowers imperfect, destitute of *perianth*, axillary, solitary. — *Barren fl.* within a calyptriform *spatha*. *Stam.* 1. *Anther* nearly sessile, 4-celled. — *Fertile fl.* without a *spatha*. *Germen* 1, sessile, with one erect *ovule*. *Style* 1. *Stigmas* 2—4, elongated, linear. *Fruit* with 1 seed. — Named after the *Naiades*, or water-nymphs.

1. *N. flexilis* Rostk. (*flexible* N.); leaves narrow linear very minutely denticulate, sheaths ciliato-denticulate. *Caulinia* Willd.

Bottom of lakes and streams; near Roundstone, Connemara, Galway: Mr. D. Oliver. 4. 8. — *Leaves* ternate or nearly opposite, 1-nerved, pellucid, sharply but minutely and remotely denticulate. We have not been able to examine the flowers of any of the genus in a recent state: the sterile plants have not, we believe, been found in this country; we observe four stigmas in the Irish specimens, as described by Kunth.

** *Pollen confervoid.* *Plants growing in the sea.*

5. *ZOSTÉRA* Linn. Grass-wrack.

Flowers imperfect. *Stamens* and *pistils* solitary in each flower, inserted in 2 rows upon one side of a flat thin *spadix*. *Spatha* foliaceous. *Anthems* ovate, sessile, alternating with the ovate *germens*. *Style* 1. *Stigmas* 2, elongated, linear. *Fruit* with 1 seed (bursting vertically: Wilson). — Named from ζωστήρ, a girdle, or ribband; which the leaves somewhat resemble.

1. *Z. marina* L. (*broad-leaved G.*); leaves linear 1—7-nerved, *spadix* linear without appendages on the margin, *achenes* striate. E. B. t. 467. — *α.* leaves broader 3—5-nerved, peduncle of the *spatha* thick shorter than the *spadix*. — *β.* leaves narrow 1—3-nerved, peduncle of the *spatha* slender as long as or longer than the *spadix*. *Z. angustifolia* Roth.

a. In the sea; *β.* creeks and salt-water ditches, and on the sea-shore; both common. γ . 7, 8.—*Stems* various in length, as are the linear obtuse, somewhat 2—7-nerved *leaves*, which have sheathing bases. *Spadix* linear, arising from a sheathing portion of the leaf, which thus forms the *spatha*. *Flowers* green, borne, in two rows, on one side of the *spadix*, quite destitute of perianth. *Pistils* and *anthers* alternate, generally 2 *anthers* and then 1 *pistil*, both ovate, or oblong-ovate; the *germen* terminated by a bipartite *style* and two filiform *stigmas*. *Anthers* bursting irregularly.

2. *Z. nana* Roth (*dwarf G.*); leaves 1-nerved, spadix short few-flowered with extra-marginal appendages, achenes nearly even. *Borr. in E. B. S. t.* 2931.

Dover beach; Poole Harbour, Dorsetshire; Brading Harbour and Ryde, Isle of Wight; Emsworth Creek, between Sussex and Hants; Blyth, Northumberland. Between Fairlie and Hunterston Point, Ayrshire, covering hundreds of acres. γ . 4—8.—*Leaves* slender, 3—4 inches or more in length. *Spathas* oblong-lanceolate, inflated. *Fruit* faintly striate (Fries).

SUB-CLASS II. GLUMACEÆ. (ORD. CVI. CVII.)

Flowers destitute of true perianth (unless the urceolate or 2—3-valved covering to the ovary in some Cyperaceæ, or the glumellas of the Gramineæ, be considered such), but enclosed within imbricate alternate chaffy scales or bracteas.

CONSPECTUS OF THE ORDERS.

106. CYPERACEÆ. Embryo at the base of the albumen and enclosed within it. Leaves with entire sheaths.

107. GRAMINEÆ. Embryo lateral, naked. Leaves with split sheaths.

ORD. CVI. CYPERACEÆ Juss.

Flowers perfect or imperfect, furnished each with a solitary partial bractea called a *glume*, imbricated on a common axis or *rachis*, the whole constituting a *spikelet*. *Perianth?* (here called *perigynium*) only in the fertile imperfect flowers, rarely membranous, 2—3-valved, the valves distinct or usually united (in *Carex*), generally entirely wanting. *Stamens* hypogynous, definite (1—12), usually 3, with sometimes an additional row of abortive *filaments* (called *setæ*, or *hypogynous bristles*). *Anthers* erect, 2-celled. *Ovary* superior, 1-celled, with one erect *ovule* at its base. *Style* single, 2—3-cleft. *Stigmas* 2—3. *Fruit* an *achene*, crustaceous, or with a corky or fleshy, sometimes bony skin. *Embryo* lenticular, enclosed in the base of copious *albumen*.—*Stems often angular, frequently without joints*. *Leaves with entire sheaths*. *Lower glumes in each spikelet often destitute of stamens or pistil*.

* *Flowers perfect. Spikelets 2-ranked. Perigynium 0.*

1. CYPERUS. Spikelets many-flowered; glumes keeled, mostly all fertile, equal. Bristles none. Style deciduous.
2. SCHÆNUS. Spikelets 1—4-flowered; lower glumes smaller, empty. Style deciduous. Bristles 3—5 (in British species).

** *Flowers perfect. Spikelets with the glumes imbricated on all sides. Perigynium 0.*

† *Several of the lower glumes empty or smaller than the fertile ones.*

3. CLADIUM. Spikelets with 1—3 perfect flowers. Achene with a fleshy or somewhat corky coat, pointed with the enlarged base of the style. Bristles 0.
4. RHYNCHOSPORA. Spikelets few-flowered. Achene compressed, crowned with the persistent dilated base of the style. Bristles 6—12.

†† *Lowest (1—2) glumes empty or larger than the others, sometimes all fertile.*

‡ *Bristles scarcely so long as the glumes, or wanting.*

5. BLYSMUS. Spikelets bracteate, alternate, forming a distichous or compressed spike. Achenes crowned with the persistent filiform style.
6. ELEOCHARIS. Spikelets solitary. Achene crowned with the dilated persistent base of the style. Bristles 2—6.
7. ISOLEPIS. Spikelets solitary or fascicled. Achene pointed with the narrow base of the style (the remainder of which is deciduous), or pointless. Bristles 0.
8. SCIRPUS. Spikelets solitary or fascicled. Achene pointed with the persistent narrow base of the style (the remainder of which is deciduous), or pointless. Bristles about six.

†† *Bristles at length much longer than the glumes.*

9. ERIOPHORUM. Bristles straight, at length silky.

*** *Flowers imperfect.*

10. KOBRESIA. Spikelets 1—2-flowered. Perigynium 0 (or of 1 or 2? distinct scales).
11. CAREX. Achene enclosed within an urceolate perigynium.

* *Flowers perfect. Glumes of each spikelet imbricated in two opposite rows. Perigynium 0. (Gen. 1, 2.)*

1. CYPÉRUS Linn. Cyperus. Galingale.

Spikelets many-flowered. Glumes keeled, imbricated in 2 opposite rows, mostly all fertile, equal. Hypogynous bristles 0. Style 2—3-cleft, deciduous; its base not dilated nor jointed upon the germen. Achene often tipped with the small base of the style.—Name: *κυπείρος* of the Greeks, an appellation given to one of this genus, probably in allusion to the Cyprian goddess, the roots being reputed aphrodisiac.

1. *C. longus* L. (*sweet C.*, or *English G.*); spikelets linear-lanceolate erecto-patent in doubly compound umbels, general involucre very long leafy, partial small, stem triangular, stigmas 3. *E. B. t.* 1309.

Very rare. Marsh near St. David's, Pembrokeshire; Walton-in-Gordano, Somersetshire; near Swanage, Dorsetshire; near Scabrooke, Kent; Boyton, Wilts; Penzance, Cornwall; Isle of Wight. Guernsey and Jersey. 4. 8, 9.—*Rhizome* creeping, very aromatic and astringent.

2. *C. fuscus* L. (*brown C.*); spikelets linear-lanceolate fasciculato-corymbose, glumes patent, involucre of 3 unequal leaves, stem triangular, stigmas 3. *E. B. S. t.* 2626.

Ecl Brook meadow, Little Chelsea, near Walham Green; pond on Shalford Common, 2 miles from Godalming, plentiful; Codhill bog, Guisborough Moor, Yorkshire. Jersey. ☉. 8, 9. — A small plant, only a few inches high. *Root* fibrous. *Stamens* usually 2. .

2. SCHÆ'NUS Linn. Bog-rush.

Spikelets 1—4-flowered. *Glumes* 6—9, imbricated in 2 opposite rows; lower ones smaller, empty. *Hypogynous bristles* 3—6, small or none. *Style* 3-fid, deciduous; its base not dilated nor jointed upon the germen. *Achene* trigonous, tipped with the slender base of the style, or pointless.—Name: from *σχοινος*, a *cord*; because a kind of cordage was anciently made from plants of this tribe.

1. *S. nigricans* L. (*black B.*); stem nearly terete, spikelets collected into a roundish head shorter than the outer bractees, glumes scabrous at the keel. *E. B. t.* 1121.

Wet moors and boggy places. Rare in Scotland, except on the West coast. 4. 6, 7.—Remarkable for its rigid habit, nearly setaceous *leaves*, and the dark brown almost black heads of *flowers*. "*Bristles* small, 3—5, reddish-brown, spiny, the spines pointing upwards:" *Mr. Wilson*. On account of the bristles this belongs to *Mr. Brown's* genus *Chatospora*, which merely differs by that character.

** *Flowers* perfect. *Glumes* of each spikelet imbricated on all sides. *Perigynium* 0. (Gen. 3—9.)

3. CLADIUM Schrad. Twig-rush.

Spikelets 1—3-flowered. *Glumes* 5—6, imbricated on all sides, the lower ones empty and smaller. *Style* deciduous; its base conical, not jointed upon the germen. *Achene* with a somewhat loose, fleshy, or corky coat, tipped with the persistent enlarged base of the style. *Hypogynous bristles* none.—Named

from *κλαδος*, a *branch*; so called, perhaps, from the many branches bearing spikelets.

1. *C. Mariscus* Br. (*prickly T.*); panicle much divided leafy, spikelets capitate-conglomerate, stem terete leafy, margins of the leaves and keel rough. Schœnus *L.*: *E. B.* t. 950.

Boggy and fenny places, in several parts of England and Ireland. Galloway and Sutherlandshire, Scotland. 4. 7, 8.—*Rhizome* creeping, 3—5 ft. high, leafy. *Leaves* rough, almost prickly at the margin and keel. *Glumes* ovate, brown, 6—7 in an ovate *spikelet*; inner ones the longest, generally the two or sometimes three innermost ones have flowers, the outer one sometimes with stamens only. *Achene* almost as large as the spikelet. *Stamens* 2. *Stigmas* generally 2, sometimes 3 or 4.

4. RHYNCHÓSPORA Vahl. Beak-rush.

Spikelets few-flowered. *Glumes* 6—7, imbricated on all sides, the lower ones smaller, empty. *Hypogynous bristles* several, included, toothed. *Style* subulate, bifid, usually deciduous; its base dilated but scarcely articulated upon the germen at the base. *Achene* biconvex, crowned with the persistent base of the *style*.—Named from *ῥυγχος*, a *beak*, and *σπορα*, a *seed*. (Very different in habit from *Eleocharis*, although near in generic character.)

1. *R. álba* Vahl (*white B.*); spikelets in a compact corymb as long as the outer bracteas, leaves narrow-linear, base of the style without teeth, bristles about 10 (9—11) with deflexed teeth, stamens 2. Schœnus *L.*: *E. B.* t. 985.

Wet pastures and turfy bogs. 4. 6—8.—*Spikelets* of *flowers* white or whitish, collected so as to form a level surface at the top. *Achene* in this and *R. fúsca* obovate, compressed, smooth, distinctly margined, tapering at the base into a short stalk. *Style* persistent, dilated at the base, which is not articulated, nor so broad as the seed, but easily distinguishable from the shining *achene* by its colour and texture.

2. *R. fúsca* Sm. (*brown B.*); spikelets in an oval head much shorter than the outer bracteas, leaves nearly filiform, base of the style with erect teeth, bristles 6 with ascending teeth, stamens 3. Schœnus *L.*: *E. B.* t. 1575.

Bogs, principally in the south-west of England and Ireland. 4. 7, 8.—Habit of the last, though very different in specific character. Heads of *flowers* oval, rich brown; *spikelets* larger, and the *stigmas* more protruded. Smith and Sturm have figured and described only 3 bristles to each flower; we find 6 in both British and American specimens, but the three alternate ones are shorter, and sometimes not longer than the achene.

5. BLÝSMUS *Panz.* Blysmus.

Spikelets bracteate, arranged on a zigzag rachis into a distichous compressed *spike*. *Glumes* imbricated on all sides; the lower ones gradually larger, the two lowest empty. *Style* persistent; its base not dilated nor jointed upon the germens. *Hypogynous bristles* 3—6, or none. *Achene* plano-convex oval, gradually tapering into the style. — Name: βλυσμος, *source*, or *spring*; near which the species usually grow.

1. *B. compréssus* *Panz.* (*broad-leaved B.*); lowermost bractea subulate somewhat leafy, bristles 3—6 with reflexed teeth persistent as long as the style, leaves flat keeled rough on the margins and keel. *Schœnus L.*: *E. B.* t. 791. *Scirpus carinatus* *Schrad.* *Carex uliginosa L.*

Boggy pastures, by river-sides and near the sea, not uncommon. 4. 6, 7.—*Stem* 6—8 inches high, leafy. *Glumes* brown, striate.

2. *B. rúfus* *Link* (*narrow-leaved B.*); bracteas all equally membranous, bristles none (or caducous?), leaves very narrow grooved smooth. *Schœnus Huds.*: *E. B.* t. 1010. *Scirpus Schrad.*

Marshy plains, especially near the sea; particularly common in Scotland, as far as Shetland. On the coast of Wales, west of England, and west of Ireland. 4. 7.—More slender, rigid, and upright than the last: *spikes* darker; the *glumes* more membranous, thin, not striate, and more obtuse, in both very broad and convolute. We have seen no *hypogynous bristles*; neither did *Smith*; *Kunth* also found them absent, except in a single flower where there was a slender one with spreading teeth.

6. ELEÓCHARIS *Br.* Spike-rush.

Spikelets solitary, terminal, many-flowered. *Glumes* imbricated on all sides, uniform, scarcely any empty, one or two lowest the largest. *Hypogynous bristles* (1—12) toothed, included, rarely none. *Style* 2—3-fid; its base dilated and jointed upon the *germen*. *Achene* crowned with the broad indurated corky base of the style.—*Marsh plants*. Stems *simple, leafless, sheathed at the base*.—Name: έλος, έλεος, a *marsh*, and χαίρω, to *delight in*; from the place of growth.

1. *E. palústris* *Br.* (*creeping S.*); stem nearly terete, rhizome erceping, stigmas 2, achene plano-convex crowned with the compressed base of the style shorter than the (usually 4) persistent bristles. *Scirpus L.*: *E. B.* t. 131. *E. uniglumis Link.*

Sides of ditches and wet marshy places, frequent. 4. 6, 7.—Some botanical writers make two species of this: one with the outer glume only half surrounding the spike at its base, the other, hence

called *E. uniglumis* by Link, almost wholly surrounding it. For the last the following stations are given : Aberdeen, Orkney, Barvas in the Isle of Lewis, Parkstone in Dorset, and Sussex. Mr. Babington has described a species under the name of *E. Watsoni*; it is small, with the rhizome scarcely creeping; the achene is said to be longer than the 4—6 bristles, and striate; it is only known from two or three stems having been found in Dr. Balfour's herbarium among *Scirpus pauciflorus*, which he had collected in Cntyre, and with which it agrees in most of the characters.

2. *E. multicaúlis* Sm. (*many-stalked S.*); stem terete, rhizome scarcely creeping, stigmas 3, achene obovate triquetrous crowned with the triquetrous base of the style longer than the 5—6 persistent bristles. *Scirpus* Sm.: *E. B.* t. 1187. *Scirpus palustris* β. *Linn. Lapp.* ed. 2.

Probably not uncommon in marshy places throughout the kingdom, but frequently passed by for *E. palustris*. 4. 7. — Closely allied to the last, of which Kunth seems disposed to consider it a variety; like it, too, it has the outer glume either half surrounding or almost wholly surrounding the spikelet: the latter state is the *E. uniglumis* of many foreign collectors. The simplest and sometimes only distinguishing character between them is afforded by the fruit.

3. *E. aciculáris* Br. (*least S.*); stem setaceous nearly terete, sheaths leafless, spikelet ovate acute, glumes equal, stigmas 3, bristles 1—3 caducous. *Scirpus* L.: *E. B.* t. 749. *Isolepis Schlecht.* *Scirpidium Nees.*

Sides of lakes, and wet, sandy, and marshy places, frequent. 4. 7, 8. — The most slender and delicate of the genus. *Root* fibrous, with filiform suckers. *Glumes* obtuse or slightly acute. *Achene* obovate-oblong, biconvex, pale yellow, impressed with dotted lines, tipped with the almost globose dark base of the style.

7. *ISÓLEPIS* R. Brown. *Isolepis*. Mud-rush.

Spikelets many-flowered. *Glumes* imbricated on all sides, nearly all fertile and equal. *Hypogynous bristles* 0. *Style* 2—3-fid deciduous; its base not jointed upon the germen. *Achene* tipped with the narrow base of the style, or pointless. — Named from *ισος*, *equal*, and *λεπίς*, a *scale*; on account of the uniform size of the glumes which constitute the inflorescence.

* *Stigmas* 2. *Achenes* compressed. *Spike* solitary, terminal. *Eleogiton*.

1. *I. flúitans* R. Br. (*floating I.*); stem floating compressed branched, spikes ovate, glumes nearly equal obtuse, stigmas 2, achene obovate plano-convex tipped with the narrow base of the style. *Scirpus* L.: *E. B.* t. 216. *Eleogiton Link.*

Ditches and still lakes, and pools of water, which are sometimes dried up. 4. 6, 7.

** *Stigmas* 3. *Achenes* triquetrous.

† *Spikes* 1—3, often apparently lateral, from the lower bractea being a continuation of the stem.

2. *I. setacea* R. Br. (*Bristle-stalked M.*); cæspitose, stem filiform with 1 or 2 leaves at the base, spikelets about 2 terminal, bracteas 1 or 2 very unequal lower one erect leafy much longer than the spikelets, achene mucronate ribbed obovate and marked with transverse lines. *Scirpus* L.: *E. B.* t. 1693.

Moist gravelly places, frequent. 4. 7, 8.—*Stems* 2—5 in. high, very slender. *Stam.* usually 2. *Stigmas* 3.

3. *I. Savi* Schultes (*Savi's M.*); cæspitose, stem filiform leafy below, spikelets 1—3 terminal, bracteas 1 or 2 and unequal ($\frac{1}{2}$ — $1\frac{1}{2}$ times) as long as the spikelets, achene subglobose minutely dotted not furrowed. *Scirpus* Seb. et Maur.: *E. B. S.* t. 2782. *Scirpus filiformis* Savi. — α . spikelets 2—3 shorter than the 2-leaved bractea. — β . *monostachys*; spikelet solitary longer than bractea. Hook. *I. pygmæa* Kunth. *Fimbristylis* Vahl. *Scirpus leptaleus* Koch.

Wet bogs, Ireland, and in the west of England and Scotland; Shanklin, Isle of Wight, plentiful. Jersey.— β . Dorsetshire; North Devon; near Ryde, Isle of Wight, not uncommon. Cork, and other places in Ireland. 4. 7.—In habit the *var. a.* much resembles the last species, as the *var. b.* does the *Eleocharis acicularis*. *Stigmas* 3. *Achene* usually rough, with slightly elevated points, but in some specimens from Galloway, Scotland, it only appears to be rough on account of numerous impressed dots, like a thimble.

†† *Spikes* numerous, collected into globular heads.

4. *I. Holoschæ'nus* Roem. et Sch. (*cluster-headed M.*); stem terete, spikelets lateral collected into compact globular sessile or stalked heads, leaves subulate channelled. *Scirpus* L.: *E. B.* t. 1612.

Sandy sea-shores, very rare. Braunton, North Devon; Watchet, Somersetshire. 4. 9.

8. SCIRPUS Linn. Club-rush. Bulrush.

Spikelets solitary or fascicled, many-flowered. *Glumes* imbricated on all sides, equal, one or two lowest the largest, sometimes empty. *Hypogynous bristles* about 6, usually retrorsely toothed, scarcely so long as the glumes, sometimes 0. *Style* deciduous; its base not jointed upon the germen. *Achene* tipped with the narrow base of the style, or pointless.—Name, according to Théis, from *cirs*, Celtic, which makes *cors* in the plural, whence *chorda* in Latin, and *cord* in English; the stems having been formerly employed for the same purposes as those of *Schæ'nus*.

* *Spikelets numerous. Stem terete.*

1. *S. lacustris* L. (*Lake C. or B.*); spikelets in compound lateral umbels mostly shorter than the terete almost leafless stem, glumes notched mucronate smooth ciliate, anthers bearded at the end, style trifid, achene bluntly trigonous obovate shining and polished. *E. B.* t. 666.

Plentiful on the margins of lakes and ponds. 4. 7, 8.—*Rhizome* much creeping. *Inflorescence* truly lateral, near the extremity of the stalks, which are very variable in size, 2—8 feet high, and as thick as a finger at the base. *Spikelets* often almost sessile. *Glumes* brown, fringed. *Achene* obovate-triangular, with 6 bristles.

2. *S. Tabernæmontani* Gmel. (*glaucous C.*); spikelets in compound lateral umbels mostly shorter than the terete almost leafless stem, glumes notched mucronate rough with raised points ciliate, anthers glabrous at the end, style bifid, achene elliptical compressed (pale brown). *S. glaucus* Sm.: *E. B.* t. 2321.

Rivers and ponds, also where the water is brackish. Very abundant on both sides of the Clyde between Bowling Bay and Glasgow. 4. 6—8.—United to the last by Mr. Bentham, who says that the “characters are very inconstant, and that there are often 2-cleft and 3-cleft styles in the same spikelet.” This we have not observed.

** *Spikelets numerous. Stem triangular towards the apex. Panicle naked, terminal, but often apparently lateral from the lower bractea being a mere continuation of the stem. Style bifid. Achene lenticular, compressed.*

3. *S. carinatus* Sm. (*blunt-edged C.*); stem terete below bluntly triangular upwards, its sheaths leafless or the uppermost one with a leaf, cyme terminal decompound, bracteas two unequal, spikelets oblong, glumes notched mucronate slightly rough with raised points ciliate, stigmas 2, achenes smooth. *E. B.* t. 1983. *S. trigonus* Roth. *S. Duvalii* Hoppe.

Banks of rivers, very rare. About London, and on the banks of the Arun, Sussex. 4. 7, 8.—Mr. Bentham says that this name is sometimes given to a variety of *S. lacustris* (our *S. Tabernæmontani*) with the stems rather more triangular at the top, sometimes to a slight variety of *S. triquetus*: we have seen too few specimens to decide the point.

4. *S. triquetus* L. (*triangular C.*); stem acutely triquetrous straight at the point, its upper sheath with a short broad triquetrous leaf, spikelets ovate or oblong-ovate clustered lateral sessile and stalked naked, glumes notched mucronate smooth fringed their lobes rounded obtuse, stigmas 2, achenes smooth. *E. B.* t. 1694.

Muddy banks of the Thames, near London; and the Arun, near

Amberley, Sussex. 2. 8. — “*Anthems* with a short beardless point,” *Bab.*; “denticulate at the point,” *Kunth.*

5. *S. püngens* Vahl (*sharp C.*); stem triquetrous straight at the point, sheaths with long narrow keeled leaves, spikelets few sessile lateral, glumes bifid mucronate smooth slightly fringed their lobes acute, stigmas 2, achenes smooth. *E. B. S.* t. 2819. *S. Rothii* Hoppe. *S. tenuifolius* DC. *S. triqueter* β. *Sm.*

On the wet sandy banks of St. Ouen's Pond, Jersey. 2. 6, 7. — Distinguished from *S. triqueter*, by its acutely lobed glumes. “*Anthems* with a subulate fringed point:” *Bab.*

*** *Spikelets numerous. Stem triangular. Panicle leafy. Style usually 3-fid. Achenes somewhat trigonous.*

6. *S. maritimus* L. (*Salt-marsh C.*); stem leafy triangular, spikelets terminal clustered stalked or sessile, bracteas several foliaceous, glumes with a mucro between the acute segments of the notch. *E. B.* t. 542.

Salt-marshes, frequent. 2. 7, 8. — *Rhizome* ereeping, sometimes swelling into knots or tubers. *Leaves* frequently longer than the stem, flat, acuminate. *Stigmas* 3, sometimes 2. *Achene* smooth, obovate. *Bristles* 1—6, sometimes entirely wanting: *Kunth.*

7. *S. sylvaticus* L. (*Wood C.*); stem triangular leafy, cyme terminal many times compound, bracteas several foliaceous, spikelets 3 or 4 together, glume entire obtuse with a small sharp point. *E. B.* t. 919.

Moist woods and banks of rivers. Not generally frequent in England, although abundant in South Kent. About Killin, Perthshire; Lanarkshire, and in many places in the south of Scotland. 2. 7. — A handsome species, bearing innumerable small, greenish, ovate spikelets. *Rhizome* creeping. *Stem* 2—3 feet high. *Leaves* broadly linear. *Bristles* 6, scarcely longer than the obovate achene, straight and sharply toothed, the teeth pointing downwards. The allied *S. radicans* Sehk. is stoloniferous; its spikelets are much larger and solitary, the glumes pointless, and the bristles long, capillary, flexuose, and puberulous at the apex.

**** *Spike solitary, terminal. Style 3-fid. Achene trigonous. Bæothryon.*

8. *S. pauciflorus* Lightf. (*Chocolate-headed C.*); cæspitose, stem terete striate with a tight leafless sheath at the base, spike few-flowered ovate naked about twice as long as the two lowest obtuse glumes, achene reticulate-striate longer than the retrorsely hispid bristles pointed with the longish base of the style. *E. B.* t. 1122. *S. Bæothryon* Ehrh. *Eleocharis pauciflora* Link.

Moors in Scotland, not unfrequent. In England, rare; near

Yarmouth, Norfolk; Anglesea, and Bangor in Wales. *¶*. 7, 8.—Habit of small plants of *Eleocharis palustris*. Achene pale, obovate, triquetrous, terminated by the rigid base of the withered style, which is not swollen at the base nor jointed, but gradually tapering from the obtuse apex of the fruit. Roots fibrous, sending out jointed runners.

[9. *S. párvulus* Roem. et Sch. (*least C.*); cæspitose, stems terete without leaves or sheaths with several barren filiform ones, spike terminal few-flowered, glumes obtuse the two lowest slightly longer than the others, hypogynous bristles retrorsely hispid twice as long as the obovate oblong mucronate smooth achene. *Eleocharis Hook. Br. Fl.*

On a mud flat near Lymington, Hants; not now to be met with. *⊙* 7.—Creeping at the base by means of capillary runners. Mr. Babington describes this with “one close-pressed leafless sheath” on the stem, and “leaves filiform acute radical slightly dilated at the base and clasping the stem,” probably meaning what we and others consider barren stems. In habit it is most related to *Isolepis fluitans*, of which some consider it a dwarf variety.]

10. *S. cæspitosus* L. (*scaly-stalked C.*, or *Deer's Hair*); stem nearly terete striate, sheaths with subulate leaves, the two outermost glumes (fertile) with long rigid points equal to or longer than the (small) few-flowered spikes; achene pointed with the persistent base of the style shorter than the bristles. *E. B. t.* 1029. *Eleocharis Link.*

Moors and moist heathy places, everywhere. *¶*. 6, 7.—Stems 3—12 inches high. Bristles 6, capillary, with a few erect teeth near the point. Achene obovate, triquetrous, pale yellow, tipped with a mucro, as in most of the true *Scirpi*. Upon Ben Lawers a variety is sometimes found, having the larger of the two outer glumes an inch long, 4 times the length of the spike.

9. ERIOPHORUM Linn. Cotton-grass.

Spikelets many-flowered. *Glumes* imbricated on all sides, nearly equal, all fertile or the lowermost sometimes empty. *Hypogynous bristles* several, protruded, at length very long and silky. *Style* 3-fid, deciduous, its base not jointed upon the germen. Achene triquetrous, tipped with the narrow base of the style or pointless.—Named from *ερion*, wool, and *φειω*, to bear.

* *Spikelets* solitary. Bristles 4—6, at length crisped.

1. *E. alpinum* L. (*Alpine C.*); stem triangular, leaves much shorter than the sheaths, spikes oblong-ovate. *E. B. t.* 311.

Moss of Restenet (now drained), near Forfar: Mr. R. Brown and Mr. G. Don. Durness, Sutherlandshire: Prof. Balfour. *¶*. 6.—*Scirpus cæspitosus* has been often collected for this rare species, but in fruit they are readily distinguished by the bristles.

** *Spikelet solitary. Bristles very numerous, straight.*

2. *E. vaginatum* L. (*Hare's-tail C.*); stem terete below triangular upwards, leaves long setaceous, upper sheaths leafless obtuse inflated, spike ovate. *E. B. t.* 873.

Turf-bogs and barren moors, not unfrequent, especially in the mountainous parts of the north. 4. 3—5.—*Stems tufted.*

3. *E. capitatum* Host (*round-headed C.*); stem terete, leaves short, upper sheaths leafless obtuse inflated, spike obovate almost globose. *E. B. t.* 2387.

“Ben Lawers, by the side of a rivulet, near perpetual snow:” *G. Don.* 4. 7, 8.—We fear that Mr. Don had accidentally mixed some foreign or cultivated specimens with the *E. vaginatum*, which is very common on Ben-Lawers, and which alone is now to be found there: most specimens distributed by him belong to *E. vaginatum*. The true *E. capitatum* is said to be creeping, but Kunth doubts if it be a distinct species from the preceding.

*** *Spikelets several to each stem, peduncled or fascicled.*

4. *E. latifolium* Hoppe (*broad-leaved C.*); stem triangular upwards, leaves linear-lanceolate nearly flat below contracted into a triangular point above the middle, stalks of the spikelets scabrous (usually elongated), bristles 2—3-times longer than the spikelets, achene cuneate-obovate, glumes 1-nerved. *E. polystachyon a. L.?* *Sm.* in *E. B. t.* 563. *E. pubescens Sm.: E. B. S. t.* 2633.

Bogs, marshes, and heaths, rather rare. Chiefly in the northern counties of England. Anglesea. About Dublin and probably elsewhere in Ireland. Bonnington Woods, Lanarkshire; and perhaps in several other counties of Scotland. 4. 5, 6.

5. *E. angustifolium* Roth (*narrow-leaved C.*); stem nearly terete, leaves linear channelled and folded or sometimes nearly flat towards the base triangular above the middle, stalks of the spikelets quite smooth, bristles 4- (or more-) times longer than the spikelet, achene obovate, glumes 1-nerved.—*a.* leaves narrow folded at the base. *E. B. t.* 564. *E. gracile Sm.: E. B. t.* 2402. *E. polystachyon β?*, *γ. Linn. Flor. Suec.*—*β.* leaves broader and somewhat flat towards the base. *E. polystachyon Sm.* (partly).

Turf-bogs, meadows, and moors, common. 4. 5, 6.—Don's specimens of Smith's *E. gracile*, from Ben Lawers, belong to this species.

6. *E. gracile* Koch (*slender C.*); stem somewhat triangular, leaves narrow linear triquetrous throughout, stalks of the spikes densely scabrous-pubescent, bristles, about twice as long as the spikelets, achene narrow linear-oblong triangular shortly

stalked, glumes many-nerved. *E.B.S.* t. 2886. *E. triquetrum* Hoppe.

Bogs in England, rare. Near Halnaby in Yorkshire, about 4 m. from Darlington; in Whitmoor Pond, Surrey, half-way between Guildford and the Woking station on the S. Western Railway. 4. 6, 7. — The above three species seem distinct: the first and last have scabrous or downy stalks to the spikelets, particularly *E. gracile*, but differ in the foliage and glumes: *E. angustifolium* has an intermediate kind of leaf, but the stalks of its spikes are quite glabrous. Mr. Benthain says, however, that the characters "do not appear to be nearly so constant as has been supposed," and he therefore unites them all under the name of *E. polystachyon* L.

*** *Flowers imperfect.* (Gen. 10, 11.)

10. *KOBRESIA* Willd. Kobresia.

Spikelets 1—2-flowered, each with a broad sheathing glume (bractea?) at the base, several in each spike; the spikes approximate near the apex of the stem and forming a compound spike. *Flowers* all imperfect.—*Barren spikelets* 1-flowered. *Scales* 0. *Stam.* 3.—*Fertile spikelets* 1—2-flowered. *Upper fl.* sterile with 3 stamens, or rudimentary, or wanting. *Lower fl.* fertile with a convolute scale (glume?) next the axis. *Style* 1. *Stigmas* 3. *Perigynium* 0 (except the scale).—In habit nearly allied to *Scirpus* and *Blysmus*, but the flowers are monœcious; it also resembles some species of *Carex*, but has not the urceolate *perigynium* of that genus.—Named in honour of *M. de Kobres* of Augsburg, a patron of botany.

1. *K. caricina* Willd. (*Sedge-like K.*); scales obtuse without an accessory process. *Elyna Mert. et Koch.* *Schœnus monoi-cus* Sm.: *E. B.* t. 1410.

Moors in Durham and Yorkshire; Cronkley Fell, and about Widdy Bank in Teesdale Forest. *Schroine-ach-Lochan* (? *Sronach-an-Lochan*), Breadalbane. 4. 8.—*Stems* scarcely a span high, tufted, naked, longer than the narrow linear leaves at their base. *Glumes* and *scales* convolute, brown. Scarcely two original describers have defined this genus in the same way: some call the glume a bractea, and the scale a glume; others consider the glume and scale to be two pieces of a perigynium, and that there is neither a bractea nor a glume; by some there is said to be a glume and also a perigynium of two pieces, while others think that the pistillum is included within one scale, but that there is in the fertile floret a second scale when there is also a floret with stamens; lastly, some consider what we have called a spike (composed of spikelets) to be a spikelet compound at the base. The plant still requires to be carefully examined when recent in its different stages. In *K. laxa* N. ab *E.* the scales are acute, with a filiform accessory process.

11. CÁREX Linn. Carex. Sedge.

Spikelets several-flowered; *flowers* imperfect, the two kinds in the same or in different spikelets. *Glumes* imbricated on all sides. — *Barren fl.* *Stam.* rarely 2. *Fertile fl.* *Perigynium* of one piece, urceolate, enclosing the *pistil.* *Style* 1. *Stigmas* 2—3. *Achene* compressed or triquetrous, very rarely (in *C. microglochin*) with an hypogynous bristle, included within the persistent *perigynium* (which is therefore in this genus supposed to form the external part of the *fruit*).—Name: supposed to be derived from *gearr*, Celtic, hence *κείρω* in Greek, to *cut* or *shear*; in allusion to its sharp-angled leaves and stems.¹

i. *Spikelet solitary, terminal. Stigmas 2.** *Diœcious.*

1. *C. dioica* L. (*creeping separate-headed C.*); spikelet simple diœcious, fruit mostly ascending ovate shortly acuminate rough at the margin upwards, leaves and terete stem slightly scabrous, rhizome creeping. *E. B. t.* 543.

Spongy bogs. 4. 5, 6.—About 6 inches high.

2. *C. *Davalliána* Sm. (*prickly separate-headed C.*); spikelet simple diœcious, fruit ovate much acuminate recurvato-deflexed rough at the margin upwards, leaves and slightly angled stem more or less scabrous, root tufted. *E. B. t.* 2123.

Lansdown, near Bath; now lost by drainage. Kincardineshire. 4. 6.—*Stem* 6—12 inches high. In Swiss specimens the stem towards the apex is more angled than in the last species, but frequently not more scabrous. In both the achene is obovate, tipped with the persistent base of the style, compressed. The claim of this species to be considered a native has been deemed doubtful by many, it being supposed that *C. dioica* has been mistaken for it. This is probable, but equally so that it has been passed over for *C. dioica*, if indeed the two species be truly distinct. In the late Mr. Brodie's

¹ In this difficult genus, the species with *glabrous fruit* and terminal *barren spikelets* require to be entirely rearranged, many of them not strictly agreeing with the characters of the sections to which they are referred. Thus, some of those placed in the section with single barren spikelets have occasionally as many as 3, and a few of those of the section with 2 or more such spikelets exhibit frequently only one. The length of the fertile spikelets is also uncertain; and their being stalked or sessile, erect or drooping (even although we refer only to the lowermost one), are characters equally subject to variation in the same species. The pubescence of the fruit is not always to be relied on. The number of the *stigmas* is generally constant, but occasionally we have seen only two in species which are described as having always three. The form of the *achene* varies considerably in the same species, but usually within certain limits; its surface, as to the marking, appears to us to be almost the same in every British species, being minutely and closely dotted with impressed points, afterwards, when ripe, almost quite smooth, and never rough with raised points or papillæ. Some valuable remarks on several of the species and their arrangement, have been made by Mr. John M'Laren in the *Botanical Gazette*, vol. iii. p. 17.

Herbarium there are specimens given him in 1809 by Prof. Beattie under the name of *C. dioica*, (the sterile from "Rubislaw, &c.," the fertile from "Garvock,") which have apparently no creeping rhizomes, and the fruit much acuminate and recurved: but the stems are very slightly scabrous, and scarcely more angled than is usual in *C. dioica*.

** *Androgynous*. (*Stamens and pistil in the same spikelet*.)

3. *C. pulicáris* L. (*Flea C.*); spikelet simple, upper half with barren flowers, fruit lax oblong-lanceolate acuminate reflexed. *E. B. t.* 1051.

Bogs, frequent. \mathcal{L} . 5, 6.—*Stems* 3—12 inches high, smooth. *Leaves* setaceous or filiform. *Fruit* dark brown, shining, smooth.

ii. *Spikelet solitary, terminal*. *Stigmas* 3.

4. *C. rupéstris* All. (*Roch C.*); spikelet linear with a few fertile lax flowers at the base, fruit obovate triquetrous rostrate adpressed with an entire orifice scarcely longer than the obtuse or cuspidate persistent glume. *E. B. S. t.* 2814. *C. petræa* Wahl. *C. attenuata* Br.

Shelves of rocks; top of Glen Callader, corrie of Loch Ceannor (? Ceann-mor), Little Craigendal, Aberdeenshire; Glen Dolc, Clova; Inchnadamff, Sutherland; Ben Lawers. \mathcal{L} . 7.—*Rhizome* creeping. *Stem* 3—8 inches high, rough upwards. *Leaves* flat, ending in a long, attenuate, tortuous, rough, triangular point.

5. *C. pauciflora* Lightf. (*few-flowered C.*); spike simple of few flowers the uppermost barren, fruit lax lanceolato-subulate terete patent or reflexed longer than the deciduous glume. *E. B. t.* 2041. *C. leucoglochin* Ehrh.

Not unfrequent on the Highland mountains, in moory places. Lowther hills near Dalvene pass, and meadow above Drumlanrig Castle, Dumfries-shire. Crag Lake, Northumberland; between Pickering and Whitby, Yorkshire. \mathcal{L} . 6, 7.—*Rhizome* creeping. *Fruit* pale-yellowish, striate.

iii. *Spikelets androgynous in a compound, spike*. *Stigmas* 2.

* *Spikelets capitate, barren at the end*. *Bracteas* not foliaceous.

6. *C. incurva* Lightf. (*curved C.*); spikelets barren at their extremity collected into a globular head, bracteas membranous shorter than the spikelets, fruit broadly ovate acuminate nearly entire at the point, stem obtusely angular, leaves channelled. *E. B. t.* 927. *C. juncifolia* All.

Sandy sea-shores in the north of Scotland. \mathcal{L} . 6.—*Rhizome* extensively creeping. *Stems* 2—4 inches high, curved. *Head of spikelets* large.

** *Spikelets alternate, sterile at the base. Bracteas not foliaceous. Rhizome widely creeping.*

7. *C. *brizoides* L. (*distichous C.*); spikelets about 6 approximate curved arranged nearly in two rows, fruit rather longer than the acute glume ovato-lanceolate compressed plano-convexerved narrow-winged serrulate, the beak bifid.

Studley Wood, Yorkshire. 2. 7. — Although we do not doubt that the plant said by Mr. MacIvor of the Drumlanrig Gardens to have been found by him in 1844 in the above artificial wood or shrubbery may be the species of Linnæus, we see no reason to believe that it is indigenous there. We omitted it in former editions of the Flora; Mr. Bentham also passes it over in silence in his Handbook; and by Mr. H. C. Watson it is looked on as a very suspicious native. According to De Candolle and Duby it occurs in a wild state in France only in the south or on the Jura, so that it is highly improbable that it grows in this country unless where it had been planted. Had Mr. Babington not admitted it into his Manual, we should not have deemed it deserving of notice.

*** *Spikelets alternate, barren at the base. Bracteas not foliaceous. Root tufted, without creeping rhizomes.*

† *Fruit with a narrow membranous wing or margin.*

8. *C. ovális* Gooden. (*oval-spiked C.*); spikelets about 6 barren at their base oval approximate, fruit as long as the glume ovate-acuminate compressed plano-convex striate with a broad membranous margin rough at the edge, the beak bifid. *E. B. t. 306. C. leporina* Wahl.; *Benth.*

Bogs and marshy places. 2. 6. — *Stems* 1 foot high, triangular. *Spikelets* brownish-green, shining. *Glumes* concealing the fruit. *Bracteas* small, uppermost ones resembling the glumes.

†† *Edges of the fruit acute or obtuse, not winged.*

9. *C. stelluláta* Gooden. (*little prickly C.*); spikelets few (3—4) barren at their base nearly globose rather distant, fruit larger than the glume ovate much attenuate plano-convex sharply angled striate spreading, beak bifid serrate at the margin. *E. B. t. 806.*

Marshy and heathy places. 2. 5, 6. — *Stem* 6 inches to a foot high. *Leaves* nearly as long as the stem. Distinguished by its few, much-beaked fruits, placed in small distant spikelets, and spreading, when ripe, in every direction.

10. *C. cúrta* Gooden. (*white C.*); spikelets 4—8 barren at their base rather distant or sometimes approximate elliptical, bracteas very minute (except the lower one), fruit erect broadly ovate acute plane above slightly convex beneath rather bluntly angled faintly striate longer than the membranous glume, beak

short. *C. canescens* *Wahl.*— α . beak of fruit emarginate not split. *C. curta* *E. B. t.* 1386.— β . *alpicola*; smaller, beak of fruit sometimes split to its base. *C. canescens* β . *Wahl.* *C. Persoonii* *Sieber.* *C. vitilis* *Fr.*

Bogs, in several places, not very general. Very common about Glasgow.— β . Loch-na-gar; Ben Lawers; Ben Wyvis. Snailsworth dale, Yorkshire; Durham; Caernarvon; Merioneth. 4. 6.—Distinguished by its pale elliptical *spikelets*, and imbricate, compressed, almost elliptical *fruit*. In α . the glumes are whitish with a green keel; in β . they are usually brown with a white margin, but occasionally they are as in α . The remaining character taken from the beak of the fruit, even were it constant, would scarcely suffice to distinguish β . except as a small or mountain variety.

11. *C. leporina* *L. (Hare's-foot C.)*; spikelets 3 rarely 4 ovate contiguous, fruit elliptical rostrate plano-convex smooth-nerved with a scariose bidentate finally entire orifice scarcely longer than the ovate obtuse glume which is scariose at the margin. *Linn. Fl. Lapp.*; *Fl. Suec.* (in part): *E. B. S. t.* 2815. *C. Lachenalii* *Schk. Y. f.* 79. *C. lagopina* *Wahl.*

Rocks, on the west side of Loch-na-gar, and on Cairn-toul, Aberdeenshire. 4. 7.—*Root* fibrous. *Stem* 4—8 inches high, smooth, rarely rough below the spike. *Leaves* a line broad, shorter than the stem. *Spikelets* brown. *Bractes* broad, ovate, obtuse, the lowest aristate, rarely foliaceous and larger than the spikelet. *Achene* elliptical, plano-convex, pale yellow: *Bott.* *Linnæus* seems to have confounded this and *C. ovalis* under his *C. leporina*, but the description and specimen preserved in his Herbarium refer to the present species. This may be a reason for suppressing the name entirely and adopting *Wahlenberg's* as done by Mr. Babington, but not for transferring it to *C. ovalis*, as done by *Wahlenberg* and Mr. *Bentham*.

12. *C. elongata* *L. (elongated C.)*; spikelets numerous oblong lower ones sometimes rather distant upper approximate, bractes minute or wanting, fruit plano-convex oblong-acuminate many-ribbed scarcely bifid at the point spreading longer than the glume. *E. B. t.* 1920.

Marshes, rare. Aldwark, near Sheffield; near Manchester; Over, Cheshire; Colemere Mere, Shropshire; Coggeshall, Essex; Weybridge, Surrey. Aghagallan, Co. Antrim. 4. 6.—*Roots* tufted. *Stems* 1—1½ foot high, with 3 acute angles, rather rough, as well as the *leaves*. *Spikelets* brown. *Fruit* lax. *Achene* linear-oblong. A very distinct species.

*** *Spikelets* alternate, barren at the base or apex or at both ends, lower ones distant. *Bractes* foliaceous. *Root* tufted.

13. *C. remota* *L. (distant-spiked C.)*; spikelets several (simple) barren at their base very distant, fruit longer than the glume oblong-ovate shortly acuminate plano-convex acutely angled

bifid at the point, lower bracteas very long and narrow leafy reaching beyond the spike. *E. B.* t. 832. *C. tenella* Schk.

Woods and moist shady places. 4. 6.—Slender, pale green, $1\frac{1}{2}$ —1 foot high. Resembling the following, but “the stem has blunter angles; the lowest bractea is much longer than in that species; the leaves are compresso-canaliculate (with incurved sides) and much narrower; the glumes, too, are narrower, their nerve quite smooth, discontinued below the membranous summit:” *Wilson*. Fruit serrate above the middle. Achene ovate, pointed.

14. *C. axilláris* Gooden. (*axillary-clustered C.*); spikelets several very distant and compound below crowded and simple above, fruit longer than the glume oblong-ovate shortly acuminate plano-convex acutely angled, the beak deeply bifid, lowest bractea foliaceous as long as or longer than the spike, the middle ones setaceous shorter, upper ones with a point scarcely so long as the spikelet. *E. B.* t. 993.

Marshes, rare. Middle and south of England; and as far north as Lancashire and Yorkshire. 4. 6.—Stem with 3 acute angles; spikelets with more numerous flowers than the last, lower one or two compound. Glumes with 2, close, green, generally rough nerves, reaching to the summit, hence more rigid. Fruit serrate above the middle. Achene obovate, pointed.

15. *C. Boenninghausiána* Weihe (*Boenninghausen's C.*); spikelets several distant and more or less compound below crowded and simple above, fruit as short as the glume ovate-acuminate plano-convex acutely angled, the beak deeply notched on one side, lower bractea foliaceous as long as the spike, middle ones shortly setaceous scarcely so long as the spikelets, upper ones pointless. *Coleman* in *E. B. S.* t. 2910. *C. axillaris* β . *Bromf.*

Marshes and by the sides of ponds, rare. Balls Wood, Hertford; Esher, Surrey; Pulborough and Hastings, Sussex. Killin, Perthshire; Culreach near Gordon Castle, Banffshire; Crichton Castle near Edinburgh. 4. 6.—Several (4—6) of the lower spikelets are compound and distant. Very closely allied to the last, and most probably a mere variety of it; the chief distinction lies in the more luxuriant inflorescence, which is sometimes a foot long. Stem with slightly convex sides and 3 rough angles. Glumes pale brown with a scarious margin smooth. Fruit with the edges blunt at the base, sharp and serrate from below the middle. Achene ovate-elliptical, pointed.

***** Spikelets alternate, barren at the extremity, the lowest or most of them compound, all more or less approximate. Bracteas not foliaceous. Root tufted.

16. *C. paniculáta* L. (*great panicled C.*); spike panicled consisting of ovate spikelets arranged on the elongated diverging branches of a common axis, fruit ascending ovate plano-convex gibbous on the back; faintly many-nerved margined above and

ending in an acuminate winged serrate bidentate beak, stem triquetrous with the angles very sharp and scabrous and the sides flat. *E. B. t.* 1064.

Swampy and spongy bogs. 4. 6.—*Roots* densely tufted. Much larger than the next two, and rougher, often 5 feet high. “Most unpleasant to handle, and of all the British species the most harsh and unmanageable:” *Wilson*. *Leaves* broad. *Spike* 2—4 inches long. *Bracteas* ovate, acute or cuspidate, rarely with a setaceous point. Base of the *fruit* broad, truncate, with a central notch resembling the next, and less distinctly stipitate than in *C. teretiúscula*, obscurely many-nerved on both surfaces. The ripe *achene* scarcely differs from what we observe in *C. paradoxa*, except by being usually a little more ovate, obtuse, and more flat on one side.

17. *C. paradoxa* Willd. (*paradoxical C.*); spike panicled consisting of spikelets arranged on short rather distant branches of a common axis, fruit ascending ovate plano-convex gibbous on the back with numerous short prominent ribs near the base, beak bidentate serrulate, stem trigonous and scabrous in the upper part with convex sides. *E. B. S. t.* 2896. *C. paniculata* β. *McLaren*.

Bogs. Askam bog, and Heslington field, York; Hoveton, Norfolk. Ladiston near Mullingar, Ireland. 4. 6, 7.—An artificial species. *Root* densely tufted, like that of *C. paniculata*, and the *spike* almost as compound. *Stems* and *leaves* nearly as in *C. teretiúscula*; *leaves* slender, rough at the edges, triquetrous at the end. *Fruit* obscurely stipitate, with about 7 nerves on the convex side, and 9 on the other, all disappearing about the middle. *Achene* unequally convex on both sides, broadly ovate, pointed with the inconspicuous base of the style, suddenly contracted below into a short stalk. This is closely allied to the last and the next species; Mr. Bentham, indeed, unites the three.

18. *C. teretiúscula* Gooden. (*lesser panicled C.*); spike compound oblong or cylindrical consisting of ovate compact compound or simple spikelets with acute membranous scales, fruit subplano-convex gibbous on the back with 3—4 central nerves on the convex surface stipitate ending in an acuminate winged serrulate bidentate beak, stem trigonous and scabrous in the upper part with convex sides. *E. B. t.* 1065. *C. Ehrhartiana* Hoppe.

Boggy watery meadows, in various places. 4. 6.—This grows usually in separate tufts, with much narrower *leaves* than *C. paniculata*, of a glaucous hue, and with blunter *stems*, 18—30 in. high, their angles roughish. *Bracteas* membranous, ovate, acute, the lowest sometimes with a setaceous point. *Spike* 1—1½ inch long. *Achene* with a very short point (base of the style), tapering at the base, convex, turbinate. In this and in *C. paniculata* a central line runs from the convex surface of the fruit, along the back, which is sometimes winged and

then gives the beak a triangular form; but the beak is often as compressed as in *C. paradoxa*. A form of this species, with the habit of *C. paradoxa*, occurs near Manchester, and at Malham Tarn in Yorkshire.

19. *C. vulpina* (great *C.*); spikelets compound collected into a cylindrical crowded spike, fruit ovate-acuminate plano-convex nerved longer than the glume divergent, beak finely serrate bifid, stem very acutely triangular the angles scabrous, leaves broad. *E. B. t.* 307. *C. nemorosa* Willd.

Wet shady places, especially near water. *4.* 6.—Two feet or more high; stem stout, rough, as are the margins of the broad leaves. *Bractæas* setaceous. *Spike* large, greenish. *Fruit* pale, not gibbous as in the three preceding species, rough at the margin of the lengthened beak, and bifid at the point. *Achene* oval, compressed, with a very short beak; the beak is slightly thickened at the insertion of the greenish base of the style in this and several of the allied species, and also in the two next; in *C. vulpina* it is usually 10 or 12 times shorter than the achene, and about twice as long as in *C. divulsa*, while in *C. muricata* it is intermediate.

***** *Spikelets* simple, alternate, barren at their extremity. *Root* tufted.

20. *C. divulsa* Gooden. (gray *C.*); spike elongated lax consisting of 5—6 simple spikelets which are subremote below with pale membranous acute scales; fruit ovate acute suberect obscurely nerved rough at the point with blunt margins longer than the mucronate pale membranous glume, stem with rough angles. *E. B. t.* 629 (*young*). *C. muricata* *β.* Wahl.: *M'Laren*.

Moist shady pastures, not rare. *4.* 5, 6.—This species resembles the next: the fruit is scarcely so acuminate, and somewhat erect instead of diverging, and the achene is rather narrower; the colour of the whole plant is paler, the spikes more elongated and slender, and the spikelets more distant. "The slight difference in the distance of the spikelets is not a specific character, and I doubt whether the difference in the glumes is sufficient to constitute *C. divulsa* a distinct species, especially when we find such a suspicious intermediate form as the *C. muricata virens* of Andersson."—*M'Laren*.

21. *C. muricata* L. (greater prickly *C.*); spike oblong of 4—6 compact or approximate simple spikelets with brownish ovate pointed scales, fruit ovate-acuminate spreading obscurely nerved with acute rough margins longer than the mucronate brown glume, stem with rough angles. *E. B. t.* 1097. *C. spicata* Huds.

Marshy and especially gravelly pastures. *4.* 5, 6.—Stem 1—2 ft. high, slender. *Bractæas* small, lanceolate, subsetaceous. *Fruit* yellowish-brown, broad, rather large.

***** *Spikelets (simple) alternate, barren at their extremity.*
Rhizome creeping.

22. *C. arenária* L. (*Sea C.*); lower spikelets fertile, upper ones barren, intermediate ones barren at the end, all crowded into an oblong interrupted spike, fruit ovate with a membranous margin nerved shorter than the acuminate glume, bracteas membranous lower ones somewhat leafy, stem triangular, leaves plane. *E. B. t.* 928.

Sandy sea-shore, frequent, where it is of great service in binding the soil. \mathcal{A} . 6. — *Rhizomes* excessively long and creeping. *Stems* rough, 8 inches to a foot high. *Fruit* with a green membranous wing.

23. *C. intermédia* Gooden. (*soft brown C.*): lower and upper spikelets fertile, the intermediate ones barren, all crowded into an oblong interrupted spike, fruit ovato-lanceolate with an acute narrow margin serrate upwards nerved longer than the glume whose midrib disappears below the summit, bracteas membranous the lower ones somewhat leafy, stem triangular with scabrous angles, leaves plane. *E. B. t.* 2042. *C. disticha* Huds.

Marshy ground and wet meadows. \mathcal{A} . 6. — *Stems* 1—1½ foot high. *Spikes*, or heads of spikelets, similar in general appearance to the last. *Fruit* large, not so distinctly winged but gradually flattened towards the margin, more striate on its flat or inner side, the beak broader at its summit. *Stem* much taller, and the leaves less confined to the lower part of it. The name *disticha* is certainly the oldest, but is usually relinquished in favour of the more expressive one given by Goodenough.

24. *C. divisa* Huds. (*bracteate Marsh C.*); spikelets crowded into a somewhat ovate head, the lower ones simple or compound with a leafy erect bractea at their base, glumes with an excurrent midrib, fruit roundish ovate convex on one side slightly concave on the other, beak acutely bifid with finely serrate edges, stem roughish at the summit. *E. B. t.* 1096.

Marshy places, especially near the sea, principally in the east of England, and in Angus-shire. \mathcal{A} . 5, 6. — *Stems* about 1 foot high; lower bracteas mostly with a long leafy point.

iv. *Terminal spikelet androgynous, the rest fertile. Stigmas 3.*

25. *C. Vahlîi* Schk. (*close-headed Alpine C.*); spikelets 1—4 oval or oblong obtuse aggregate the terminal one with barren flowers at its base, stigmas 3, fruit obovate triquetrous with a short notched beak scabrous above with crystalline points longer than the ovate somewhat obtuse glume, stem triangular rough at the edges towards the summit. *E. B. S. t.* 2666. *C. alpina* Wahl.

Rocks above the head of Loch Callader in Braemar; Glen Fiadh

(Fee) on the south side of Glen Dole, Clova. 4. 7.—We retain what appears to us the oldest name, which was accompanied by a description. Wahlenberg no doubt refers to Swartz as the authority for *C. alpina*, but does not mention any work in which he had given the name or a specific character. Willdenow adopts Schkuhr's name, and quotes as a synonym *C. alpina* Fl. Dan. t. 403; but our copy of that volume (published in 1770) gives no specific or trivial name to it.

26. *C. canescens* L. (*hoary C.*); spikelets 3—5 oblong terminal one barren at the base, fertile ones sessile contiguous to the upper one except the lowest which is on a short stalk and sub-remote, fruit oblong or oval obtuse compressed ultimately trigonous nerved bidentate rough with crystalline points shorter at the base of the spikelet than the ovate or oblong cuspidate glume. *C. Buxbaumii* Wahl.: *E. B. S.* t. 2885. *C. polygama* Schk. *X. Gg.* f. 76.

Near Toome Bridge, on a small island in Lough Neagh, Ireland. 4. 7.—*Stem* 1—2 ft. high, erect, acutely triangular, rough, leafy at the base, and there clothed with purple sheaths which are torn and reticulate at their edges. *Leaves* straight, shorter than the stem. *Middle spikes* smallest, more or less approximate. *Bractes* rough, auricled but without sheaths, the lowest sometimes longer than the stem, upper ones setaceous. *Fruit* glaucous-green, stained with brown. *Glumes* brown with a pale green nerve. This is *C. canescens* of the Linnean Herbarium, but it is probable that he intended to include also *C. curta* β. in his description.

27. *C. atráta* L. (*black C.*); spikelets 3—4 oblong, terminal one barren at the base, fertile contiguous shortly stalked inclined, lowest one on a longer stalk and rather distant ultimately drooping, lower bractea foliaceous, sheaths scarcely any, fruit elliptical triquetrous (when ripe) broader but rather shorter than the acute glume, beak terete short bifid at the point. *E. B.* t. 2044.

On the Welsh mountains; Snowdon, rare. Rocky cliffs on the top of a hill near Hartfell, Dumfries-shire; Breadalbane, Clova, and other Highland mountains, Scotland. 4. 6, 7.—About 1 foot high. *Leaves* usually broad for the size of the plant. *Glumes* dark brown, opaque. *Fruit* pale yellowish-brown, at first compressed, but as it ripens exhibiting 3 angles towards the base.

v. *Terminal spikelets barren, 1—3 (or more); the rest fertile.*

Stigmas 2.

* *Beak of fruit entire.*¹

† *Margin of leaves involute when dry: sheaths not filamentose.*

28. *C. vulgáris* Fries (*common C.*); spikelets cylindrical

¹ Mr. Bentham acknowledges only two species of this group, and these doubtfully distinct. They are according to him: 1. *C. cæspitosa*, glumes mostly obtuse,

erect, 1 rarely 2 barren, fertile 3—4, lower one shortly stalked, sheaths none, lower bractea subfoliaceous with small round dark auricles, glumes elliptical or oblong obtuse, fruit plano-convex elliptical or obtuse with filiform nerves which disappear upwards and an obsolete or evident entire beak. *C. cæspitosa* Gooden.: *E. B. t.* 1507. *C. angustifolia* Sm. *C. Goodenovii* Gay.

Marshes and wet pastures, frequent. 4. 5, 6.—A foot or more high, slightly creeping. *Stem* weak, acutely triangular, laxly cæspitose. *Leaves* slender, their *sheaths* not filamentose. *Fruit* flat at the back, 3—5-nerved; convex in front; 7—9-nerved. *Achenes* broadly oval, compressed, with a short slender beak. We adopt the name given to this extremely common, but confused species, by Fries, being certainly older than that of Gay.

[29. *C. Gibsóni* Bab. (*Gibson's C.*); “spikelets erect, 1 barren, fertile 2—4 narrowed downwards slightly stalked, bracteas foliaceous with short auricles, fruit lanceolate acute with many nerves not reaching the summit and a short entire beak, achene broadly obovate very blunt with a short thick beak, stem acutely 3-angular or triquetrous rough towards the top.” *Bab. in Ann. Nat. Hist. xi. t. 5.* *C. cæspitosa* β . *chlorocarpus* Gibs. *C. vulgaris* β . *McLaren*.

Hebden Bridge, Yorkshire; now lost by drainage. 4. 6.—Creeping. *Stems* 6—8 inches high. *Leaves* flat; *sheaths* not filamentose. *Glumes* a third shorter than the *fruit*, which is gradually narrowed from below the middle to the top and nearly twice as long as the *achene*. The *perigynium* having lengthened out much beyond the *achene*, shows that this is in an abnormal condition, and probably of some other species; Dr. Boott suspects it to be *C. acuta*, whilst Mr. Babington thinks it more allied to *C. vulgaris*. We are not acquainted with it.]

30. *C. aquátilis* Wahl.? (*straight-leaved Water C.*); spikelets erect, 1 or more barren, fertile 3—4 nearly sessile cylindrical elongated attenuate below often acuminate with barren flowers at the extremity, sheaths none, bracteas long foliaceous, fruit broadly obovate without nerves broader than the glume with a very short entire beak, stem smooth obtusely triangular, leaves long straight narrow-linear. *E. B. S. t.* 2758.

On table-land in boggy situations in the mountains of Clova; and in the valley by the bridge at Clova. 4. 7, 8.—*Stem* 1—2 ft. high. *Achene* obovate, blunt with a short beak. Dr. Boott doubts if this be really the *C. aquátilis* of Wahlenberg, since that author describes his plant as having glumes much narrower than the fruit, which is

spikelets $\frac{1}{2}$ —2 inches long (comprehending our sp. 28, 30, 31, and 33); 2. *C. acuta*, glumes mostly narrow and pointed, fertile spikelets 3 inches or more long (our sp. 32 and 29?); and if they differ by no more important characters than these they ought to be conjoined.

not the case here, and the place of growth and size being so very different; “in ipsis fluviis et lacubus”—“sæpe altitudinem humanam attingens”—“ad radicem sæpius pollicem crassa.” It appears to be the species intended by Fries.

†† *Margins of leaves revolute when dry.*

31. *C. rígida* Gooden. (*rigid C.*); spikelets cylindrical or oblong, 1 barren, fertile 2—4 approximate and subsessile lower one shortly stalked, sheaths none, lower bractea subfoliaceous with small black subrotund auricles, glumes elliptic or oblong obtuse black, fruit oblong or elliptical obtuse plano-convex without nerves with an obsolete entire beak, sheaths of leaves not filamentose. *E. B. t.* 2047. *C. saxatilis* *Fl. Dan.* (not *L.*)

On Snowdon; the Cheviots, and Hartfell, Dumfries-shire, and especially the summits of all the more elevated Highland mountains. *¶.* 6—8.—*Stems* 4—6 inches high, laxly cæspitose. *Leaves* flat, at length recurved at the margin, about as long as the firm acutely triangular *stem*, which is rough at the top. *Achene* lenticular, with a slender beak.

32. *C. acúta* *L.* (*slender-spiked C.*); spikelets cylindrical elongated slender, barren 1—3, fertile 3—4 more or less remote and barren at top, lower one stalked often attenuate and interrupted at the base, sheaths none, bracteas long foliaceous, lower often surpassing the stem with pale or ferruginous elongate auricles, fruit oval biconvex nerved green with rusty stains, beak short entire, glumes dark lanceolate fertile ones acute, sheaths of leaves not filamentose. *E. B. t.* 580. *C. gracilis* *Curt.*

Moist meadows and wet pastures, frequent. *¶.* 5.—*Stems* 2—3 ft. high, acutely triangular, rough. *Leaves* broad, flat, sheathing, in 3 rows, green. Fertile *spikelets* often very long, verticillate at the base, and pendulous in flower. *Glumes* about as long as the fruit, generally longer at the base of the spikelets, and shorter near the summit, but variable in that respect.

33. *C. cæspitósa* *L.* (*tufted Bog C.*); spikelets cylindrical, 1 rarely 2 barren, fertile 2—3 often approximate erect thickish lower one very shortly peduncled or sessile, upper often barren at top, sheaths none, lower bractea subfoliaceous abbreviate with large oblong pale auricles, fruit compressed elliptical or oblong closely imbricate nerved generally longer and broader than the black oblong obtuse or lanceolate glume, beak short entire, sheaths of leaves filamentose. *Gay* in *Ann. Sc. Nat.* 2d ser. xi. p. 194. *C. stricta* *Gooden.* (1792): *E. B. t.* 914.

Marshes, common. *¶.* 4—6.—*Stems* 2 ft. or more high, densely cæspitose. *Leaves* subconduplicate, narrow, at length revolute on the margin, glaucescent, shorter than the firm acutely triangular rough

stem. Fruit whitish, pulverulent, deciduous, always compressed, in 8—9 rows.—The name, and the remarks of Linnæus (*Iter Scanica*, p. 207, 241), refer to this species. He however did not distinguish it from *C. vulgaris* Fries, of which a specimen alone exists in his Herbarium. Hence Goodenough considered the latter to be the true *C. cæspitosa* L., and called the present species *C. stricta*; a name, however, that had been given to an American species by Lamarck three years previously.¹

** *Beak of fruit short, 2-toothed.*

34. *C. saxatilis* L. (*russet C.*); barren spikelets 1 or rarely 2, fertile ones ovate obtuse erect the lowest stalked with a foliaceous bractea, sheaths none, glumes oblong, fruit spreading ovate inflated nerved (nerves often obsolete) with a very short beak bifid at the point, leaves acuminate with trigonous points.—*a.* fruit usually obscurely nerved chestnut-brown, glumes dark purple tipped with white, their midrib dark purple. *C. pulla* Gooden.: *E. B. t.* 2045.—*β.* taller, fruit prominently nerved green or brown twice as long as the glume, glumes fuscous the tip and midrib pale. *C. Grahami* Boott in *E. B. S. t.* 2923.

Near springs, on the higher regions of the Scottish mountains. Ben Lomond; Breadalbane range, not unfrequent; Cairn Garadh, near Ben Nevis; mountains about Loch Scavig in Skye.—*β.* Glen Fiadh, Clova; Ben Cruban near Killin. 4. 6, 7.—Linnæus could not have confounded this species with *C. rigida*; the characters in the *Flor. Lapp.* and *Species Plantarum* clearly indicate *C. pulla* Gooden., and this is confirmed by the specimen in his Herbarium. We cannot therefore yield to the fanciful idea of Wahlenberg, and some modern Swedish botanists, that Linnæus intended *C. rigida*, and so transferred the name to that species. *Stem* 6—8 inches (or in *β.* sometimes 2 feet) high. *Leaves* remarkably acuminate, slightly keeled at the back, with trigonous points, resembling some of the narrow-leaved species of *Eriophorum*. As to *β.*, the habit is considerably different, the fruit larger and longer, but we can find no certain character by which to separate it, except that the *nerves* of the *fruit* (*perigynium*) are very prominent and conspicuous the whole length, whereas in *a.* they are obscure, particularly in the upper

¹ Fries still retains the name of *stricta* for this species, and considers the *C. cæspitosa* L. to be different both from it and from *C. vulgaris*, though nearer the latter; he pronounces it a native of this country, on the authority of a specimen from Dr. Greville; his character is nearly as follows:—*C. cæspitosa* L.; spikes erect crowded, barren solitary, fertile sessile oblong, bracteas with long auricles the lowest only leaflike slender and short, fruit elliptical obtuse biconvex spreading not nerved, equal to or longer than the scale, beak short entire, glumes lanceolate (dark purple with a paler keel), stems slender triquetrous, lower sheaths leafless slightly filamentose, two upper ones with leaves, leaves of the sterile shoots broad with a recurved margin. *C. pacifica* Drej.

The plant sent by Dr. Greville was, we believe, our *C. aquatilis*, with which, however, this character agrees neither as to the bracteas nor leaves.

part: Dr. Boott considers it identical with *C. vesicaria* β . *alpigena* Fries, but that species has 3 stigmas, while we find only two.

vi. *Terminal spikelet barren, solitary* (sometimes 2 in 37, 38, 39, 41, 53, and 54). *Fruit glabrous (or scabrous in 54). Stigmas 3.*

* *Fertile spikelets abbreviated and erect, (in 40 and 41 longish and sometimes drooping).*

† *Beak of fruit bifid.*

35. *C. extensa* Gooden. (*long-bracteate C.*); sheaths very short (scarcely any) with extremely long narrow canaliculate foliaceous bracteas, fertile spikelets nearly sessile oblong, glumes slightly mucronate, fruit ovate ribbed with a short straight smooth acuminate beak bifid at the point, leaves very narrow canaliculate, stem smooth. *E. B. t. 833.*

Marshes near the sea, rare; on the east and south of England; near Liverpool. Shores of the Menai Straits. Coast of Fifeshire, Ayrshire, &c., Scotland. Ireland. γ . 6.—About 1 foot high. Quite distinct from *C. flava*, with which it has been confounded, in its very narrow canaliculate leaves, never spreading and short-beaked fruit. *Achene* oblong-elliptical, tapering at both ends, triangular and smooth.

36. *C. flava* L. (*yellow C.*); barren spikelet cylindrical obtuse, fertile spikelets globose or oval nearly sessile, lowest with a nearly included stalk, glumes obtuse, bracteas long leafy, fruit obovate turgid ribbed spreading with a long more or less deflexed or straight beak bifid at the point, stem bluntly triangular smooth.— α . barren spikelets distinctly stalked, fertile ones rather distant, beak of fruit long deflexed distinctly rough-edged. *E. B. t. 1294.*— β . spikelets all approximate, beak of fruit long rough-edged straight. *C. flava* β . *lepidocarpa* Anderss. *C. Oederi* Ehrh. γ : *E. B. t. 1773.*— γ . spikelets somewhat approximate paler small, fruit much smaller suddenly attenuate into a short straight nearly smooth beak. *C. Oederi* Anderss. *C. extensa* β . *M'Laren.*

Turfy bogs, frequent.— β . moist sandy places or heaths.— γ . perhaps not rare; marsh near Prestwick, Ayrshire. γ . 5, 6.—Stems 6—12 inches high. *Bracteas* very foliaceous, the lower one resembling the broad acuminate leaves. *Spikelets*, and indeed the whole plant, of a yellowish hue. *Achene* obovate, with 3 nearly equal flat sides and thick angles, very minutely and closely dotted with impressed points, at length nearly quite smooth. Our β . is the *C. Oederi* of *E. B.* (as we have now ascertained by means of an authentic specimen) and of most British collectors. The γ . is *C. Oederi* of Andersson and the botanists of the north of Europe, and has much more the aspect of *C. extensa*, but the achene is the same as in *C. flava*.

37. *C. fúlva* Gooden. (*tawny C.*); barren spikelets 1 or rarely 2, fertile ones oblong-oval distant, sheaths elongated shorter than the peduncles, bracteas foliaceous, fruit broadly ovate ascending glabrous ribbed acuminate with a straight rough-edged beak bifid at the point, glumes acute (not mucronate).—*α*. stem acutely 3-angular scabrous. *E. B. t.* 1295. *C. distans β. M'Laren.*—*β*. stem bluntly 3-angular smooth or scabrous near the summit, fertile spikelets on longer stalks, beak smoother with a more distinct membranous orifice. *C. speirostachya Sw.: E. B. S. t.* 2770. *C. Hosteana DC. C. Hornschuchiana Hoppe. C. distans γ. M'Laren.*

Boggy meadows, not unfrequent.—*β*. West of Scotland. 4. 6. — *Stem* 1 ft. high, with the habit of *C. distans*, but smaller; with shorter, more lax, paler-coloured, and fewer-flowered, *spikes*, acute, not mucronate, *glumes*, and an obovate, nearly smooth *achene*.

38. *C. distans* L. (*loose C.*); barren spikelets 1—2 on long stalks with obtuse scales, fertile 2—3 remote erect oblong stalked the lower stalks about twice longer than the sheathing bracteas upper ones included, glumes mucronate, fruit ovate triquetrous equally ribbed pellucidly punctate smooth or rough at the upper margins and at the edges of the narrow short bifid beak. *Boott. — E. B. t.* 1234.

Muddy marshes near the sea, probably in many places. Anglesea. Kent; Yorkshire. Guernsey. Montrose; near Inverkeithing, Fifeshire; Edinburgh; Ayrshire; Argyleshire. 4. 6. — *Stems* 8 inches to 1 or 1½ foot high, slender. *Spikelets* very distantly placed, their rather long *peduncles* entirely concealed by the sheathing bases of the *bracteas*. *Glumes* rather pale brown. *Fruit* green, inclining to brown when ripe. *Achene* ovoid-oblong, pointed at both ends, nearly smooth. To this species Mr. Benthain unites *C. fulva*, in which he is perhaps right, and also *C. lævigata*, *C. depauperata*, and *C. binervis* which certainly appear to us very different.

39. *C. punctáta* Gaud. (*dotted-fruited C.*); barren spikelet 1 rarely 2 with obtuse ferruginous scales, fertile 3 rarely 4 cylindrical erect stalked with sheathing bracteas, fruit ovate tumid glabrous shining pellucidly punctate diverging of a light green obsoletely nerved except at the margins with a linear bidentate beak larger than the ovate short aristate pale ferruginous green-nerved glume. *Boott. — Schk. Car. Suppl. tab. 6. f. 1. C. Helvetica Schleich. C. distans β. Deslongch.*

Marshy grounds near the sea. About a mile west of Charlestown, Cornwall. Vazon Bay, Guernsey. Dingle, Co. Kerry; Glengariff and Berehaven, Co. Cork; Ireland. 4. 6. — *Rhizome* creeping, composed of strong woody fibres. *Stem* 12—18 inches high, erect, smooth, leafy at the base. *Leaves* shorter than the stem. *Bracteas* with striate sheaths, varying in length. *Peduncles* rough. *Glumes* of barren *spikelets*, rarely acute or subaristate, the lowest sometimes

bractæform; *fertile spikelets* more or less remote, the two upper subapproximate, the lowest sometimes 3 inches from the middle one. *Beak* about one third the length of the *fruit*. *Achene* triangular, ovate-rhomboidal, pointed at both ends, very minutely and closely dotted. Differs from *C. distans* in its smaller size, its light green, more approximate spikes, its more erect stem, and in its fruit.

40. *C. binervis* Sm. (*green-ribbed C.*); barren spikelet solitary with obtuse scales, fertile 3—5 the upper ones sometimes subapproximate, the lower remote erect cylindrical often elongate bearing barren flowers in their upper half and some of them occasionally compound at the base, the lower stalks longer than the sheathing bractæas, glumes mucronate, fruit ovate triquetrous with a smooth rather broad bifid beak and two principal green submarginal nerves on the outer surface. *Boott.*—*E. B.* t. 1235.

Dry heaths and moors, frequent. 4. 6.—Generally taller, and in every part more rigid, than the last. *Glumes* and especially the *fruit*, more highly coloured, the latter more acutely triquetrous with two nerves near the margin on the back, which are always green, though the rest of the fruit be more or less brown. *Achene* obovate, tapering at the base.

41. *C. lævigata* Sm. (*smooth-stalked beaked C.*); fertile spikelets remote erect or drooping cylindrical stalked, stalks longer than the elongated sheaths, bractæas foliaceous, all the glumes acuminate or mucronate, fruit ovate triangular striate with a rather long acuminate beak deeply bifid at the point. *E. B.* t. 1387.

Marshes and boggy thickets, in several places both of England and Scotland. Anglesea. Near Belfast. 4. 6.—*Stem* 2—3 ft. high. *Leaves* broad, but rather short. There is rarely more than one *barren spike*, which is always triquetrous, with obtuse or sometimes acute glumes. *Achene* obovate, tapering at the base. Often in the young state confounded with *C. sylvatica*, and then most easily distinguished by its more compact spikelets and darker glumes; it flowers too a month later.

42. *C. depauperata* Gooden. (*starved Wood C.*); barren spikelets solitary, fertile ones erect remote with very few (3—4) flowers, the stalks much longer than the sheaths, bractæas foliaceous, fruit large many-nerved nearly globose inflated terminating in a long bifid beak with rough edges longer than the (pale) ovate pointed glume. *E. B.* t. 1098.

Dry woods, rare. Godalming, Surrey; Charlton Wood, Kent. Near Forfar: *G. Don.* 4. 5, 6.—*Stem* 1—1½ ft. high. *Fertile spikelets* very distant; their few *flowers*, and large inflated beaked *fruit*, decidedly marking the species. *Achene* broadly obovate, with three blunt angles. Mr. Don cultivated it in his garden, which appears to have been the only locality for it “near Forfar.”

43. *C. vaginata* Tausch (*short brown-spiked C.*); barren spikelet solitary, fertile ones 1—3 subcylindrical erect lax-flowered distant stalked, the stalks longer than the elongated loose sheaths, bracteas subfoliaceous, fruit smooth obsoletely nerved elliptic-lanceolate triangular with an acuminate obliquely bifid recurved beak longer than the ovate glume. *C. phæostachya* Sm.: *E. B. S. t.* 2731. *C. salina* Don: *Herb. Brit. n.* 216. *C. Mielichhoferi* Sm. (not *Schk.*): *E. B. t.* 2293. *C. Seotica* Spreng. *C. panicea* β . Wahl.

Highland mountains. Craig Cailleach and Meal-cuachlar, near Killin; Cairngorm and Ben Mac Dhuie, Aberdeenshire; about the falls at the head of Glen Fiadh, and in the ravines of the White Water, Clova. 4. 7.—“Differs from *C. panicea* in its broader leaves, shorter bracts with inflated sheaths, green triangular (not inflated) fruit with an emarginate beak and obtuse ferruginous glumes:” *M. Laren*. The name given by Tausch in 1821, being the oldest, we adopt it. Mr. Bentham follows Wahlenberg in uniting it to the following species.

†† *Beak of fruit entire.*

44. *C. panicea* L. (*pink-leaved C.*); barren spikelet solitary, fertile ones about 2 subcylindrical lax-flowered distant stalked, the stalks longer than the close elongated sheaths, bracteas leafy, fruit subglobose somewhat inflated obtuse glabrous with a short terete beak. *E. B. t.* 1505.

Marshy places and bogs, common. 4. 6.—*Stems* 1—1½ ft. high. *Leaves* rather broad, glaucous, rough at the edges, much resembling, as Sir J. E. Smith observes, the foliage of *C. glauca*; but the characters of the two are widely different. *Glumes* dark brown, the keel green. *Fruit* greenish-brown.

45. *C. palléscens* L. (*pale C.*); barren spikelet 1 sessile, fertile spikelets stalked oblong-cylindrical approximate scarcely pendulous much longer than the very short sheaths, bracteas foliaceous, fruit obovate-elliptical tumid striate obtuse glabrous. *E. B. t.* 2185.

Marshy places, frequent. 4. 6.—A foot or more high. *Leaves* slightly downy. *Spikes* obtuse, pale green. *Fruit* very obtuse, without a beak. *Achene* narrow-elliptical, tapering at both ends.

** *Fertile spikelets abbreviated, stalked, drooping.*

† *Beak of fruit entire.*

46. *C. capillaris* L. (*dwarf capillary C.*); fertile spikelets few-flowered lax drooping, the stalks twice as long as and included within a common sheath, fruit oblong-obovate with a short beak rather longer than the membranous ovate obtuse deciduous glume. *E. B. t.* 2069.

Plentiful on some of the Highland mountains, especially the Breadalbane range; Ben-y-Gloe; Hartfell, Dumfries-shire. Teesdale. γ . 6, 7. — *Stem* 2—6 inches high. *Leaves* mostly radical, scarcely half the length of the stem, soft. One single *bractea* includes, with its sheathing base, the lower part of all the peduncles, which are thus somewhat corymbose; rarely there is a distant *fertile spikelet*. *Barren spikelet* single, frequently on a shorter stalk than the others, and therefore appearing as if below them. *Fruit* dark brown, shining. *Achene* obovate.

47. *C. rariflora* Sm. (*loose-flowered Alpine C.*); fertile spikelets 2—3 upon long stalks narrow-oblong very few-flowered lax drooping, sheaths very short mostly membranous, bracteas subsetaceous, fruit bluntly triangular ovate with a short entire beak faintly nerved nearly as long as the glume, glume very broad and concave obtuse minutely apiculate folded round the fruit. *E. B. t.* 2516. *C. limosa* γ . *Wahl.*

Bogs, rare. Head of Glen Dole, south-east side of the Little Culrannoch, and head of Canlochan, Clova mountains; Loch-na-gar, and Cairngorm, Aberdeenshire. γ . 6. — Creeping. *Stems* about 6 inches high. *Leaves* about half an inch long, but broader than those of the next, with which it has been united by Wahlenberg, Kunth, and Bentharn. *Glumes* obtuse, very deep brown, with a pale dorsal nerve usually running out and terminating in a very minute mucro, forming a striking contrast with the pale-coloured fruits.

48. *C. limosa* L. (*Mud C.*); fertile spikelets 1—3 upon very long stalks oblong-ovate densely flowered drooping, sheaths very short, bracteas subsetaceous or lower ones leaflike, fruit elliptical compressed ribbed with a very short beak about as long as or shorter than the ovate pointed glume. — *a.* leaves narrow linear channelled rough at their edges throughout, bracteas subsetaceous, lower glumes slightly acuminate scarcely longer than the strongly ribbed fruit, upper ones longer and narrower. *E. B. t.* 2043. — *β . irrigua*; leaves broader flat rough only near the point, the lower bracteas foliaceous, lower glumes ovate- or narrow-lanceolate much acuminate longer than the faintly ribbed fruit, upper ones often broader and shorter. *C. irrigua* Hoppe: *E. B. S. t.* 2895. *C. limosa* β . *Wahl.*

Bogs and marshes. Rare in England, mostly found in the northern and mountainous parts; more frequent in Scotland and Ireland. — *β .* Muckle Moss, Northumberland. Terregles, Dumfries-shire; Ben-Im, near Loch Lomond; Clova mountains; Hill of Knock, Dunfermline. γ . 6. — Creeping. *Stems* 8—12 inches high. *Leaves* narrow. *Fertile spikelets* usually 2. *Glumes* dark brown, subapiculate. *Fruit* greenish brown. In *β .* the lower *glumes* are usually very narrow and much attenuate, becoming broader and shorter upwards, while this proportion is reversed in *a.*; in both the narrowest glumes

are either empty or with stamens, and the broadest are scarcely so broad as the fruit.

†† *Beak of fruit bifid.*

49. *C. ustuláta* Wahl. (*scorched Alpine C.*); fertile spikelets about 3 oval densely flowered drooping, the stalks about twice the length of the loose sheaths, bracteas setaceous, fruit elliptical compressed (black) shortly acuminate rough at the edges near the apex, glumes ovate-oblong acuminate narrower and rather shorter than the fruit. *E. B. t.* 2404. *C. atrofusca* Schk.

Ben Lawers, very rare; *G. Don* (1 Aug. 1810). 2. 7.—Tufted, and scarcely creeping. *Stem*, in the only Scotch specimens we have seen, from 3 to 8 inches, in Lapland ones about a foot high. *Leaves* short, broad, principally from near the root. *Fertile spikelets* 2, usually 3, on slender drooping stalks, and of a deep purple-black colour; *barren* one rather smaller, and of a dark rusty-brown. *Fruit* very obscurely nerved, perhaps nerveless.

*** *Fertile spikelets elongated (sometimes short in 54), stalked, drooping.*

† *Beak of fruit bifid.*

50. *C. sylvática* Huds. (*pendulous Wood C.*); barren spikelet solitary, fertile about 4 filiform rather slender loose-flowered slightly drooping, stalks about twice as long as the elongated sheaths, bracteas foliaceous, glumes ovate acute diaphanous with a green keel, fruit broadly ovate acuminate, beak long smooth cleft at the point, leaves narrow. *E. B. t.* 995.

Moist woods, frequent. 4. 5, 6.—Similar to *C. strigosa*; but the *spikelets* are shorter, broader, and on longer stalks; *fruit* very different, glabrous, and so acuminate as to terminate in a long beak; *glumes* longer in proportion. *Spikelets* sometimes compound.

51. *C. Pseudo-cyperus* L. (*Cyperus-like C.*); barren spikelet solitary, fertile 3—6 densely flowered cylindrical upon long stalks drooping, bracteas very leafy, lowermost sometimes sheathing the others without sheaths, glumes setaceous scabrous, fruit oblong very much acuminate ribbed, beak long deeply cloven. *E. B. t.* 242.

Moist places, by the sides of lakes and ponds; not very general. 4. 6.—*Stems* 2—3 feet high, acutely triangular. *Leaves* $\frac{1}{2}$ an inch broad. One of the best marked, and most beautiful of the genus.

†† *Beak of fruit entire or emarginate.*

52. *C. strigosa* Huds. (*loose pendulous C.*); barren spikelet solitary, fertile about 4 slender filiform loose-flowered nearly

erect, the lower stalks a little longer than the elongated sheaths upper about equal to their foliaceous bracteas, glumes elliptic-lanceolate diaphanous with a green keel, fruit oblong-lanceolate acuminate at both ends nerved slightly recurved truncate at the point, beak scarcely any, leaves rather broad. *E. B. t.* 994.

Groves and thickets, in several parts of the east and middle of England; Cotterell wood, Cheshire. Arniston woods, Edinburgh. *¶. 5, 6.*—*Stem* 1—2 feet high. *Glume* a little shorter than the fruit.

53. *C. péndula* Huds. (*great pendulous C.*); barren spikelet usually solitary, fertile 4—6 cylindrical densely flowered very long and drooping, sheaths nearly equal to the stalks lower elongated upper very short, glumes ovate mucronate, fruit ovate with a short trigonous notched beak, leaves broad. *E. B. t.* 2315.

Moist woods and shady places, not very general. *¶. 5, 6.*—*Stem* 3—5 feet high. Well distinguished by its long, pendulous, cylindrical *spikelets*, and closely imbricate *fruit*. *Achene* elliptical, pointed at both ends.

54. *C. glauca* Scop. (*glaucous Heath C.*); barren spikelets 1—3, fertile 2—3 cylindrical or ovate ultimately drooping densely flowered on long slender stalks, sheaths short scarcely any, bracteas foliaceous, glumes ovate, fruit obovate-globose scabrous or smooth, beak very short entire.—*α.* fertile spikelets cylindrical, glumes acute. *C. recurva* Huds.: *E. B. t.* 1506.—*β.* fertile spikelets cylindrical, glumes obtuse, fruit smaller. *C. Micheliana* Sm.: *E. B. t.* 2236.—*γ.* fertile spikelets ovate. *C. stictocarpa* Sm.: *E. B. S. t.* 2772.

Moist meadows, moors, groves, and alpine rocks. *¶. 6.*—*Leaves* mostly radical, very glaucous. *Stems* usually about 1 foot, sometimes 2 feet high. *Fruit* closely placed, brownish when ripe, closely dotted with depressed points, often pellucid, punctate when young, usually scabrous with a kind of abortive pubescence, or rather scattered papillæ, which are sometimes quite wanting in *γ.*

vii. *Terminal spikelets* (1 or more) barren. *Fruit* hairy or downy. *Stigmas* 3.

55. *C. clandestina* Gooden. (*dwarf-silvery C.*); barren spikelet solitary, fertile 1—3 stalked remote about 3-flowered concealed by the membranous sheaths of the leafless bracteas, fruit broadly obovate-triquetrous slightly downy contracted at the base with an entire oblique mouth, leaves longer than the stems channelled rough rigid. *E. B. t.* 2124. *C. humilis* Leyss. *C. argentea* Vill.

On the limestone rocks at St. Vincent's, Bristol; Downs near Boyton, and in great abundance on Salisbury Plain between Stonehenge and Heytesbury, Wiltshire; Brean Down, Weston-super-mare. 4. 5.—Remarkable for the few *flowers* of its fertile *spikelets*, which are concealed by the comparatively large membranous *sheaths*, as the short *stems* are by the *leaves*. The name given by Leysser is unquestionably the oldest, but has been generally abandoned in favour of the much more expressive one of *clandestina*.

56. *C. digitata* L. (*fingered C.*); barren spikelet solitary sessile, fertile 2—3 distant on long stalks erect filiform lax longer than the barren one, sheaths membranous obliquely truncate, lower ones with a setaceous bractea, glumes broadly obovate apiculate about the length of the fruit, fruit obovate-triquetrous downy on a short stalk, beak short nearly entire, leaves plane. *E. B. t.* 615.

Rare, in woods in limestone countries. Near Bath and Bristol; Wynd Cliff, Monmouthshire; wood on Great Doward Hill, Herefordshire; limestone ledges of Cleeve Hill, 4 m. from Cheltenham; Thorp-Arch, and Mackershaw wood, near Ripon, Yorkshire. 4. 5.—*Root* fibrous, tufted. *Stem* 8—10 inches high. *Leaves* soft, shorter than the stem.

57. *C. præcox* Jacq. (*vernal C.*); barren spikelet solitary, fertile 1—3 oblong approximate sessile or on a peduncle the length of the sheath, lowermost sheath short (scarcely any), lower bracteas leafy short, glumes broadly ovate acuminate, fruit downy obovate-oblong scarcely acuminate truncate at the point trigonous the sides nearly flat, rhizome creeping. *E. B. t.* 1099.

Dry pastures and heaths. 4. 4, 5.—*Stems* 3—12 inches high. *Leaves* short, rather broad. Lower *bracteas* small, but leafy; upper ones very minute. *Achenes* obovate-oblong, trigonous, with nearly flat sides. The numerous yellow *anthers* are conspicuous at an early season of the year.

58. *C. collina* Willd. (*mountain C.*); barren spikelet solitary quite sessile with obtuse or retuse glumes, fertile 1—3 ovate approximate sessile sheaths short membranous lowermost with usually a subulate bractea, glumes broadly ovate usually emarginate mucronate, fruit very downy obovate-oblong trigonous the sides nearly flat, beak very short notched, root tufted fibrous. *C. montana* Schk.: *E. B. S. t.* 2924. *C. pubescens* Gaud.

In a field by the roadside towards Eridge, about a mile south of Tunbridge Wells, Sussex; wood on Great Doward Hill, Herefordshire; Wynd Cliff, between Tintern and St. Arvans, about 4 m. from Chepstow, Monmouthshire; near Penmoyle rocks, Gloucestershire. 4. 4, 5.—Somewhat creeping, but tufted. *Stems* 4—7 inches high. *Leaves* narrow. *Fruit* densely pubescent, almost hairy, whitish,

the beak with a dark purple margin at its mouth. *Achene* obovate-oblong, triangular, with a stout trigonous beak that projects beyond the mouth of the *perigynium*. Smith has shown (E. Fl. iv. p. 113) that *C. montana* L. is the same as *C. pilulifera*; and the name having been applied to several other species, it is preferable to adopt that given by Willdenow.

59. *C. pilulifera* L. (*round-headed C.*); barren spikelet solitary with acute glumes, fertile 1—3 subglobose approximate sessile, sheaths none, lowermost bractea subulate scarcely foliaceous, glumes broadly ovate mostly acuminate, fruit downy obovate-globose with 2 principal opposite ribs, beak short bifid, root tufted fibrous. *E. B.* t. 885. *C. montana* L. *C. filiformis* Fl. Dan. t. 1048.

Moory ground, frequent. 4. 6.—*Stems* 6—12 inches high, slender. *Achene* subglobose, acuminate at the base, pointed with the stout base of the style, which seldom projects beyond the mouth of the *perigynium*.

60. *C. tomentosa* L. (*larger downy-fruited C.*); glabrous, barren spikelet solitary with ovato-lanceolate glumes, fertile 1—2 somewhat approximate nearly sessile shortly cylindrical obtuse, sheaths scarcely any, lowermost bractea foliaceous, glumes broadly ovate acute, fruit densely downy obovate subtrigonus with convex sides slightly notched at the point with scarcely any beak, rhizome creeping. *E. B.* t. 2046.

Water-meadows at Marston Maisey, Wiltshire. 4. 6.—A well-marked and very rare species, no station but the above-mentioned being known for it in Britain. *Achene* obtuse with a short beak, constricted at the base.

61. *C. filiformis* L. (*slender-leaved C.*); glabrous, barren spikelets 2 with oblong-lanceolate somewhat acute glumes, fertile 2—4 distant nearly sessile erect oblong-cylindrical, sheaths scarcely any, bracteas foliaceous long and narrow, glumes oblong-ovate cuspidate, fruit very pubescent ovate-oblong tapering into a short deeply bifid beak, leaves slender channelled, rhizome creeping. *E. B.* t. 904.

Boggy marshes, rare; chiefly found in Scotland. Leicestershire; Shropshire; Suffolk. 4. 5.—*Stem* 1—2 ft high. *Leaves* slender, their margins involute, filamentose at their base near the roots. Closely allied to *C. tomentosa*, with which it was confounded by Lightfoot and Hudson.

62. *C. hirta* L. (*hairy C.*); hairy, barren spikelets 2—3, fertile 2—3 distant stalked nearly erect cylindrical, sheaths elongated, bracteas long foliaceous, glumes elliptic-lanceolate much acuminate ciliate towards the point, fruit hairy oblong-ovate with a long beak deeply bifid at the point.—*a.* lower sheaths elongated nearly equal to the stalks of the oblong cylindrical

fertile spikelets. *E. B.* t. 685. — β . lower sheaths scarcely half as long as the stalks, fertile spikelets loose-flowered compound at the base.

Wet pastures and woods, frequent. — β . Near Inellan, Argyleshire, Yorkshire? γ . 5, 6. — *Stems* 1—2 feet high, more or less hairy in every part, sometimes shaggy, especially on the side of the sheath opposite to the bractea and near the apex: Mr. Babington, however, mentions a glabrous form with which we are unacquainted. Mr. Turner found a variety in Yorkshire, with the lower part of the fertile spikelets compound at the base; but we are not certain if it had the long stalks of our var. β ., sometimes attaining 7 inches, although the sheath be not more than 2 inches, being thus protruded 5 inches beyond it.

viii. *Barren spikelets 2 or more. Fruit glabrous or scabrous. Stigmas 3 (sometimes 2 in 66).*

* *Bracteas with sheaths.*

[63. *C. *hordeifórmis* Wahl. (*Barley C.*); barren spikelets usually 2, upper one on a long stalk, fertile 3—4 erect oblong cylindrical or ovate, upper ones approximate on stalks about the length of their sheath, lowermost remote on a stalk sometimes twice as long as the sheath, bracteas long leafy, glumes broadly ovate with a hispid point or obtuse and pointless scarious at the margin, fruit (large) scarcely twice as long as the glume ovate or oblong acuminate nerved scabrous flat on the one side rounded on the other with two ciliato-serrate winged margins, beak bifid. *C. secalina* Sm. (not Willd.)

Forfarshire, rare: *T. Drummond*. γ . 6. — We have reason to believe that although Mr. Drummond supposed he had found the specimens in one of his excursions, but uncertain where, they had been accidentally collected in his own garden, where this species was cultivated along with other curiosities which the late Mr. Don had amassed there; it is therefore as yet a very doubtful native of this country.]

** *Bracteas without sheaths.*

64. *C. ampullácea* Gooden. (*slender-beaked Bottle C.*); barren spikelet 2—3, fertile 2—3 distant shortly stalked cylindrical erect, sheaths none, bracteas foliaceous, glume lanceolate about half as long as the fruit, fruit crowded somewhat membranous subglobose inflated striate suddenly contracted into a long narrow beak bifid at the point, stem bluntly triangular. *E. B.* t. 780.

Bogs and marshes, more abundant in Scotland than England. γ . 6. — Differs from *C. vesicuria* in the smooth and nearly rounded stem, in the channelled glaucous leaves, and in the fruit, which is brownish and not half so large, with a narrower beak and of a different

shape. According to Andersson this species becomes, at a considerable elevation, *C. rotundata*; while *C. vesicaria* becomes *C. saxatilis*: this last we scarcely believe.

65. *C. vesicária* L. (*short-beaked Bladder C.*); barren spikelets 2—3, fertile 2—3 distant stalked cylindrical slightly drooping, sheaths none, bracteas foliaceous long, glume lanceolate much shorter than the fruit, fruit somewhat membranous broadly ovate inflated striate gradually acuminate into a subulate beak bifid at the point, stem acutely triangular. *E. B. t. 779.*

Bogs and marshes, apparently most frequent in the north. 4. 5, 6.—*Stems* $1\frac{1}{2}$ —2 ft. high, acutely angled. *Leaves* usually broad, sometimes narrow and involute. *Fruit* tawny, very large shining, much inflated, but not suddenly constricted. We possess what appears to be an abnormal state of this species, in which there are 6 spikelets all fertile, and all except the lowest one approximate.

66. *C. paludósa* Gooden. (*lesser common C.*); barren spikelets about 3 with obtuse or slightly cuspidate glumes, anthers with a very minute point or pointless, fertile spikelets about 3 cylindrical obtuse erect, sheaths none, bracteas very long foliaceous, glumes narrow pointed or awned, fruit subcoriaceous ovate or oblong-ovate striate with a short usually bifid beak. *E. B. t. 807.* *C. Kochiana* DC.

Banks of rivers and ditches, common. 4. 5, 6.—*Stem* 2—3 ft. high, with rough angles. *Leaves* very broad, keeled, rough. *Fruit* compressed; the *beak* sometimes entire at the point, according to Kunth. *Stigmas* occasionally only 2, and *achene* lenticular: *Boott. Sm.* In specimens from a brackish marsh between Largs and Wemyss Bay, in Ayrshire, we find usually only 2 stigmas and a linear oblong achene, but Dr. Boott considers them as certainly belonging to *C. paludosa*; the barren glumes are apparently cuspidate from their being much corroded, but when entire are quite obtuse; the fruit does not seem to ripen.

67. *C. ripária* Curt. (*great common C.*); barren spikelets 3—5 approximate with acuminate glumes, anthers tipped with a short awn, fertile spikelets 3—4 broadly cylindrical acute sessile or the lower ones stalked, sheaths none, bracteas very long foliaceous, glumes oblong pointed, fruit oblong-ovate with a short deeply bifid beak. *E. B. t. 579.*

Sides of ditches and rivers, common. 4. 5.—Larger than the last, with much broader *leaves* and *spikelets*. *Fruit* convex on the back, sometimes on both sides. Distinguished from *C. paludosa* by the acuminate glumes of the sterile spikelets and the conspicuously mucronate *anthers*. Mr. Bentham, however, considers all the characters "to be too variable to be relied upon as specific."

ORD. CVII. GRAMINEÆ Juss.¹

(See Tabs. VI.—IX.)

Florets usually perfect, sometimes imperfect, sometimes neuter (without either stamens or pistil), solitary, or 2 or more imbricated on a common axis or rachis contained within an involucre consisting of 2 (sometimes 1, rarely 0) *glumes*, the whole constituting a *spikelet*. *Perianth*? *glumaceous*: that of the fertile florets usually of 2 dissimilar *glumellas*; lower or outer simple, usually keeled or with a midrib; inner or upper with 2 lateral or dorsal nerves (hence probably of 2 united); sometimes one, sometimes both are wanting: of the barren florets of 1—2 *glumellas*: of the neuter ones often rudimentary or wanting. *Stamens* hypogynous, 1—6, rarely indefinite, usually 3. *Anthers* 2-celled, versatile. *Ovary* 1-celled, with 1 *ovule*, usually with 2 (rarely 1, or 0) minute hypogynous scales. *Styles* 2, rarely 1 (simple or bifid) or 3 (perhaps only 1, and 2—3-cleft). *Pericarp* (a *caryopsis*) closely incorporated with the seed. *Embryo* lenticular, external, lying on one side at the base of the farinaceous *albumen*.—Stems or culms usually *fistulose*, generally simple and herbaceous, knotted, sometimes branched, rarely shrubby. Leaves one to each node, with a sheath slit longitudinally on one side, having often a membranous appendage (*ligule*) at its summit (Tab. 9. f. 42. b.) Flowers small, solitary, or in

¹ Here we have a structure in the flower, and a habit in the whole plant so different from those of other flowering-plants, that, in the former especially, peculiar names have been given to its different parts, which it may be desirable to explain. The floral coverings, as they are termed, are *glumaceous* or chaffy. The outer of these, which do not immediately contain stamens or pistil, and are composed of one (see Tab. 8. f. 36. a.) or two (Tab. 6. f. 3. a.) pieces, were called by Linnaeus the *calyx*; the pieces are the *glumes* or *valves*, and they resemble a calyx in the two-valved, single-flowered genera, but often they include many flowers (Tab. 7. f. 23 a.), and with justice are considered *bracteas* or leaves of an *involucre*: in *Leersia* and *Nardus* they are wanting. The inner, generally of a thinner texture, was by Linnaeus and Smith named *corolla*; its pieces one (Tab. 6. f. 3. b.) or two (Tab. 6. f. 5. b.) in number, *glumes* or *valves*: these constitute the true *perianth* of Brown and are called *paleæ* by Beauv. and Kunth, *valvulæ* by Brown, Trinius, and Esenbeck, and *glumellæ* by Link; which last we adopt as having a special reference to this order. Mr. Bentham restricts the term *paleæ* to the inner *glumella*, calling the outer one a *flowering glume*. Within these, and at the base of the germen, are generally 2 collateral (rarely 1) small *scales* (Tab. 9. f. 42. a.), *nectary* of Linn. and Sm., *lodiculæ* of Beauv. and most others, and *squamulæ hypogynæ* of Brown. —In this order few botanists are yet agreed what ought to constitute a genus, and therefore we have not, with very few exceptions, either subdivided the genera, or changed the nomenclature adopted in previous editions; indeed, in a local Flora we do not think it desirable, if characters are thereby required of greater difficulty than can easily be surmounted by a student. We have likewise, for a similar reason, retained nearly the same arrangement of the genera as formerly, although it is certainly liable to great objections: the number of flowers in a spikelet vary in the same genus and even in the same species, as in *Catabrosa*, some species of *Poa* and *Melica*, &c.; and there is a variety of one species of *Bromus*, which we can only distinguish by very minute generic characters from *Poa* (*Glyceria*) on one hand, and *Lolium* on the other, although the genera themselves are naturally distinct.

spikelets, which are panicled (Tab. 9. f. 42. d.) racemed or spiked (Tab. 9. f. 42. c. e. f. g.). — A most natural Order, and one of the highest importance in the whole Vegetable Kingdom, comprehending the true *Grasses*.

A. *Stamens 2. Styles 2.*

1. ANTHOXANTHUM. Panicle spike-like. Spikelets awned, with one central fertile floret.
23. HIEROCHLOE. Panicle lax. Spikelets awnless, with one central perfect diandrous floret, and a barren triandrous one on each side.
32. BROMUS. Spikelets panicled, awned, with 3 or more perfect flowers.

B. *Stamens 3. Style and stigma 1. Glumes 0.*

2. NARDUS. Spike simple, unilateral. Florets sessile, solitary. Glumellas 2, outer one with a long subulate point.

C. *Stamens 3 (very rarely 1) in some or all of the florets. Styles or Stigmas 2.*

- a. *Spikelets pedicellate, panicled or racemose. Panicle often very compact, so as to resemble a spike.*

* *Spikelets with one perfect floret; barren florets 0; neuter ones, when present, either rudimentary or consisting of empty glumellas, much smaller than the perfect one.*

† *Glumes 0.*

3. LEERSIA. Panicle spreading. Spikelets awnless.

†† *Glumes 2.*

‡ *Panicle spike-like. Glumes as long as or longer than the floret.*

4. ALOPECURUS. Glumes awnless. Glumella 1, with a dorsal awn.
5. PHALARIS. Glumes awnless. Glumellas 2, awnless, glabrous, or equally pubescent, ultimately hardening.
8. PSAMMA. Glumes awnless. Glumellas 2, awnless, subcoriaceous below, and with a tuft of short silky hairs at the base.
6. PHILEUM. Glumes pointed, or with a short terminal awn, parallel. Glumellas 2, membranous, awnless.
7. LAGURUS. Glumes tapering into a long subulate point. Glumellas 2, membranous; outer one with two terminal bristles, and a dorsal awn.
10. GASTRIDIVM. Glumes acute, awnless. Glumellas 2, membranous, with a long awn below the point.
12. POLYPOGON. Glumes awned. Glumellas 2, unequal; outer one obtuse, awned almost at the very extremity.

‡‡ *Panicle lax, spreading or contracted (not spike-like).*

§ *Glumes as long as or longer than the floret.*

5. PHALARIS. Panicle somewhat contracted. Glumes keeled. Glumellas uniformly hairy, awnless, ultimately hardened on the caryopsis.

9. MILIUM. Panicle spreading. Glumes flattish on the back. Glumellas glabrous, awnless, ultimately hardened on the caryopsis.
11. STIPA. Panicle erect. Glumellas cartilaginous, outer one involute, ending in a very long twisted awn.
13. CALAMAGROSTIS. Panicle loose. Floret surrounded with long silky hairs. Glumellas membranous.
14. AGROSTIS. Panicle loose. Floret glabrous, or with a small tuft of hairs at the base. Glumellas membranous.

§§ *Glumes shorter than the floret, unequal.*

17. MOLINIA. Panicle somewhat contracted. Glumes acute, lower one 1-nerved. Glumellas ultimately cartilaginous.
18. MELICA. Panicle lax. Glumes broad, several-nerved. Glumellas ultimately cartilaginous.
15. CATABROSA. Panicle spreading. Glumes obtuse, lower one 1-nerved. Glumellas membranous.

** *Spikelets 2—3-flowered; perfect florets 2, or solitary with 1—2 barren (di- or triandrous) florets or a neuter floret as large as the perfect one.*

† *Spikelets compressed laterally or somewhat terete.*

‡ *Panicle lax, spreading or contracted.*

§ *Fertile florets 2. Barren ones none.*

15. CATABROSA. Spikelets scarcely compressed, awnless. Glumes obtuse shorter than the florets. Glumellas truncate and erose at the end, glabrous on the keel and at the base.
26. POA. Spikelets compressed, awnless. Glumes shorter than the florets. Glumellas herbaceous, entire; outer one keeled and hairy on the keel below the middle, scarious and bluntish at the end (not acuminate).
31. FESTUCA. Spikelets compressed, awnless. Glumes narrow and acute, shorter than the florets. Glumellas herbaceous; outer one convex on the back below, acuminate, not silky on the ribs.
16. AIRA. Spikelets compressed. Glumellas hairy at the base; outer one awned at the back, toothed or entire or bifid, but not setigerous, at the end.
33. AVENA. Spikelets compressed. Glumellas hairy at the base, ultimately cartilaginous and firmly inclosing the caryopsis; outer one with a long twisted awn, with 2 points or bristles at the summit.
18. MELICA. Spikelets convex on the back, awnless. Glumes as long as the florets nearly equal. Outer glumella convex on the back, entire, glabrous, ultimately cartilaginous. Neuter floret club-shaped.
17. MOLINIA. Spikelets awnless. Glumes acute, much shorter than the florets, unequal. Outer glumella convex on the back, entire, glabrous, ultimately cartilaginous. Neuter floret subulate.
27. TRIODIA. Spikelets compressed, convex on the back, awnless. Glumes as long as the florets. Glumellas hairy at the base; outer one 3-toothed at the end.

§§ *Spikelets with one perfect and 1—2 barren florets.*

19. HOLCUS. Florets 2, triandrous; lower perfect; upper barren, awned.
20. ARRHENATHERUM. Florets 2, triandrous; upper perfect, with a short bristle at the point; lower barren; with a long twisted awn.

23. *HIEROCHLOE*. Florets 3, awnless; central one perfect, diandrous; barren ones lateral, triandrous.

‡‡ *Panicle spike-like.*

21. *KOELERIA*. Panicle cylindrical. Spikelets without a bractea at the base. Glumes unequal. Outer glumella entire, pointed. Stigmas plumose.
22. *SESLERIA*. Panicle cylindrical. Spikelets without a bractea at the base. Glumes nearly equal. Outer toothed, with a short bristle at the end. Stigmas filiform.
30. *CYNOSURUS*. Panicle unilateral. Spikelets with a pectinate bractea at its base. Glumes equal. Outer glumella linear-lanceolate, mucronate or awned at the end.

†† *Spikelets broader than thick, dorsally (not laterally) compressed. Perfect floret 1, its glumellas hardening on the caryopsis; barren 0; neuter as large as the perfect one, of one glumella.*

9. *MILIUM*. Panicle lax, diffuse. Spikelets without bristles at the base, awnless. Glume 1.

††† *Spikelets flat in front, gibbous or very convex on the back (not laterally compressed). Perfect floret 1, its glumellas hardening on the caryopsis; barren or neuter as large as the perfect one, of 1—2 glumellas.*

24. *PANICUM*. Panicle in a racemose somewhat unilateral compound spike. Spikelets without bristles at the base, awned. Glumes 2; lower one the smaller.
44. *DIGITARIA*. Spikelets without bristles at the base, awnless, forming a digitate or shortly racemose compound spike. Glumes 2; lower one the smaller and sometimes obsolete.
25. *SETARIA*. Panicle in a compound cylindrical dense spike. Spikelets 1—3 together, surrounded by an involucre of bristles.

*** *Spikelets with 3 or more perfect florets, laterally compressed. Glumes 2.*

† *Outer glumellas with a dorsal awn from or below the middle.*

16. *AIRA*. Outer glumella toothed at the end; awn slender.
33. *AVENA*. Glumellas herbaceous but ultimately cartilaginous and firmly inclosing the caryopsis; outer one with two points or bristles at the summit; its awn long, twisted.

†† *Outer glumellas with or without a terminal or subterminal awn or bristle, but no dorsal awn.*

‡ *Florets not mixed with long silky hairs.*

§ *Glumes about as long as the rest of the spikelet.*

27. *TRIODIA*. Spikelets racemose. Outer glumella somewhat coriaceous, convex on the back, hairy at the base, 3-toothed at the end, middle tooth straight. Stigmas plumose.
22. *SESLERIA*. Panicle cylindrical. Glumellas naked at the base, membranous; outer one keeled, toothed, and with a short bristle at the end. Stigmas filiform.

§§ *Glumes conspicuously shorter than the rest of the spikelet.*

|| *Panicle spiked, or somewhat contracted and rigid.*

21. KOELERIA. Panicle cylindrical. Spikelets without a pectinate bractea. Glumellas membranous; outer one 3-nerved, keeled, pointed, entire.
30. CYNOSURUS. Panicle unilateral. Spikelets with a pectinate bractea at the base. Glumes shortly awned. Glumellas membranous, linear-lanceolate; outer one mucronate or awned at the end.
26. POA. Panicle unilateral. Spikelets without a pectinate bractea. Glumes awnless; outer glumella scarious on the margin, prominently 5—7-nerved, obtuse or mucronate.

||| *Panicle or raceme more or less lax, spreading or contracted.*

15. CATABROSA. Panicle spreading. Spikelets awnless, scarcely compressed, ovate, with 3 fertile florets. Glumellas glabrous on the keel, and at the base, membranous, very obtuse. Caryopsis free.
17. MOLINIA. Panicle contracted, but rather lax. Spikelets lanceolate, awnless, with 3 perfect semicylindrical florets and a subulate rudimentary neuter one. Glumellas 3—7-nerved, glabrous, entire at the end, ultimately cartilaginous and inclosing the caryopsis.
26. POA. Panicle lax or contracted. Spikelets ovate or linear, and compressed, or cylindrical, awnless. Outer glumella somewhat ovate, bluntish, rarely tipped with a minute point, herbaceous, with a scarious margin. Caryopsis free.
28. BRIZA. Panicle lax. Spikelets awnless, much compressed laterally, cordato-deltoid, with 3 perfect florets. Outer glumella navicular, obtuse, convex on the back, ultimately coriaceous and inclosing the caryopsis.
29. DACTYLIS. Panicle with the secondary branches short and very dense, subsecund. Spikelets with 3—4 perfect florets, compressed. Outer glumella lanceolate, keeled, and ciliate on the back, with a short bristle close to the summit, inclosing the caryopsis.
31. FESTUCA. Panicle lax or coarctate. Spikelets many-flowered, more or less laterally compressed. Outer glumella lanceolate, convex on the back, very acute or awned at the point, the lateral nerves slightly converging and disappearing below the summit. Styles terminal.
32. BROMUS. Panicle lax, spreading, or coarctate. Spikelets many-flowered, more less laterally compressed. Outer glumellas convex on the back, 2 of the lateral nerves usually uniting and forming an awn below the bifid summit. Styles from below the summit of the caryopsis.

‡‡ *Florets enveloped in long silky hairs attached to the axis.*

34. PHRAGMITES. Panicle lax. Spikelets with 3—4 distant perfect flowers and a barren 3-androus one at the base. Outer glumella tapering with a long narrow subulate point.

b. *Spikelets spiked, either quite sessile or shortly stalked, and arranged in a simple or compound spike or spike-like raceme.*

* *Spikelets inserted on different sides of the rachis, sometimes slightly unilateral. Spikes usually simple. Styles short. Stignas thick plumose.*

35. ELYMUS. Spikelets in pairs, each with 2—4 perfect florets. Glumes collateral, awnless.

36. *HORDEUM*. Spikelets sternate, 1—2 usually neuter or barren; fertile ones with one perfect floret and a rudimentary neuter one. Glumes collateral, awned.
37. *TRITICUM*. Spike simple. Spikelets solitary, sessile, transverse to the rachis, many-flowered. Glumes opposite, nearly equal; outer one with several nerves. Inner glumella minutely ciliate on the nerves.
26. *POA*. Spike simple or compound, somewhat unilateral. Spikelets approximate, without a pectinate bractea at the base, several-flowered. Glumes opposite; outer one 1-nerved.
30. *CYNOSURUS*. Spikelets approximate, with a pectinate bractea at the base, shortly stalked, with 2—5 perfect florets. Glumes equal, 1-nerved.
38. *BRACHYPODIUM*. Spike simple. Spikelets solitary, sessile, transverse to the rachis, remote, many-flowered. Glumes opposite, unequal; outer one with several nerves, much shorter than the contiguous lowermost floret. Inner glumella strongly ciliate on the nerves.
31. *FESTUCA*. Spikelets distant, solitary or in pairs, placed edgewise to the rachis, with 6—10 fertile florets, awnless. Glumes opposite, very unequal, much shorter than the lowermost contiguous floret, outer one the smallest, sometimes minute.
39. *LOLIUM*. Spike compressed, simple, or sometimes slightly compound. Spikelets solitary, approximate, sessile, placed edgewise to the rachis, with 3 or more perfect florets. Glumes solitary, or 2 opposite; one next the rachis small; outer with several nerves, as long as or longer than the lowest contiguous floret.
40. *LEPTURUS*. Spike simple, cylindrical. Spikelets solitary, imbedded in alternate cavities on opposite sides of the rachis. Glumes 2, cartilaginous, collateral on the outside of the cavity and covering it.
- ** Spikelets (with 1 perfect floret) unilateral, arranged on both sides of a simple rachis. Styles distinct, very short. Stigmas elongated, filiform.*
41. *KNAPPIA*. Glumes nearly equal. Outer glumella toothed at the end.
- *** Spikelets (with 1 perfect floret) arranged only on one side of the partial rachis, and forming a racemose or digitate compound spike or raceme. Styles elongated.*
42. *SPARTINA*. Partial spikes erect. Spikelets laterally compressed. Glumes very unequal. Glumellas acuminate. Styles united to near the middle. Stigmas elongated.
43. *CYNODON*. Partial spikes spreading. Spikelets laterally compressed, with a rudimentary neuter floret. Glumes nearly equal. Outer glumella cymbiform. Styles distinct.
44. *DIGITARIA*. Partial spikes spreading, digitate. Spikelets without bristles at the base, dorsally compressed, awnless, with a neuter floret of one glumella in front as large as the perfect one. Glumes very unequal.
24. *PANICUM*. Partial spikes spreading, racemose. Spikelets with a few long bristles at the base, dorsally compressed, awned, with a neuter floret of two glumellas in front as large as the perfect one. Glumes very unequal.

A. *Stamens* 2. *Styles* 2. (Gen. 1.)

1. ANTHOXÁNTHUM Linn. Vernal-grass. (Tab. VI. f. 1.)

Panicle spike-like. *Spikelets* with 1 perfect central floret, and two outer larger neuter ones. *Glumes* 2, very unequal: upper the longer. *Glumellas* of the perfect floret 2, awnless; of the neuter florets single, awned.—Name: *ανθος*, a flower, and *ξανθος*, yellow; from the yellowish hue of the spikes, especially in age.

1. *A. odorátum* L. (*sweet-scented V.*); panicle spike-like oblong often interrupted at the base, awn of the upper neuter glumella longer than the upper glume. *E. B.* t. 647: *Parn. Gr.* t. 8.¹

Meadows, woods, and pastures, abundant, often very alpine. 4. 5, 6. — A foot high, its agreeable smell in the act of drying, like that of *Woodruff* (*Asperula odorata*), gives the well-known scent to new-made hay. *Leaves* short. *Panicle* compact, yellow in age. *Glumes* very unequal. Mr. Brown first pointed out the true structure of the spikelets of this genus: previously the two neuter florets were considered by some an inner pair of glumes, by others an outer corolla or perianth. In *A. gracile* the awns of both the neuter florets are shorter than the upper glume. *Stamens* only 2, whereby this genus differs perhaps from all our other grasses, except some species of *Bromus*, and *Hierochloe*, in which last however the two lateral barren florets are triandrous. *Stigmas* very long, linear.

B. *Stamens* 3. *Style and Stigma* 1. (Gen. 2.)

2. NÁRDUS Linn. Mat-grass. (Tab. VI. f. 2.)

Spike simple, unilateral. *Spikelets* 1-flowered. *Glumes* 0. *Glumellas* 2; the outer one keeled with a long subulate point. *Stigma* elongate, filiform, papillose.—Name: from *ναρδος*, formerly given to an odoriferous substance, but not applicable in this case.

1. *N. strícta* L. (*Mat-grass*): *E. B.* t. 290: *Parn. Gr.* t. 2.

Moors and heaths, most abundant. 4. 6. — A grass of simple structure, growing in short tufts so coarse and rigid that cattle will not eat it. *Culms* and *leaves* setaceous. *Spike* long, erect, slender, grooved, and toothed at short distances for the insertion of the florets. *Glumellas* lanceolate: outer one coriaceous, purplish-green, tapering gradually into an awn; inner smaller, awnless, membranous. The only species of the genus.

¹ We refer here to Dr. Parnell's Grasses of Britain: the plates especially of the 2d part are very accurate, except perhaps as regards the hypogynous scales and the styles and stigmas.

C. *Stamens* 3 (or very rarely 1) in some or all of the *florets*.

Styles or stigmas 2. (Gen. 3—44.)

a. *Spikelets* very rarely sessile and spiked, usually pedicellate and panicled, sometimes racemose. (Tab. IX. f. 42. d.) *Panicle* often very compact so as to resemble a spike. (Tab. IX. f. 42. c.) (Gen. 3—34.)

* *Spikelets* with a single perfect floret, and no barren ones; neuter florets, when present, either rudimentary or consisting of empty glumellas much smaller than the perfect ones. (Tab. VI. f. 3—13.) (Gen. 3—14.)

† *Glumes* 0. *Stigmas* elongated, plumose.

3. *LEÉRSIA* Soland. Cut-grass.

Panicle lax, often contracted. *Spikelets* compressed laterally. *Glumes* wanting. *Glumellas* 2, chartaceous, navicular, much compressed, awnless, inclosing the loose caryopsis; lower one much the broader. *Stamens* 3 or 6, rarely 1. *Styles* short or elongated.—Named in honour of *John Daniel Leers*, a German botanist, who published in 1757 the *Flora Herbornensis*.

1. *L. oryzoides* Sw. (*European C.*); *panicle* diffuse the branches wavy, spikelet half-elliptical strongly ciliate triandrous, leaves very rough, ligule short. *E. B. S.* t. 2908.

Ditches, drains of water, meadows, brooks, and pools; rare. Near Henfield, and Arundel, Sussex; Mole river, Surrey; Boldre river, near Brockenhurst Bridge, Hants. 2. 8—10.—*Styles* shorter than the germen; in *L. Virginica* and *L. Mexicana* they are much longer.

†† *Glumes* 2. *Styles* elongated. *Stigmas* elongated, filiform.

4. *ALOPECÚRUS* Linn. Fox-tail-grass. (Tab. VI. f. 3.)

Panicle spike-like. *Spikelets* compressed laterally. *Glumes* 2, nearly equal, usually connate at the base, membranous, about as long as the floret. *Glumella* solitary, with a dorsal awn above the base. *Styles* elongated. *Neuter florets* 0.—Named from αλωπηξ, a fox, and ουρα, a tail.

1. *A. agréstitis* L. (*slender F.*); culm erect scabrous above, *panicle* cylindrical acuminate, glumes acute almost glabrous united as far as the middle, awn more than twice the length of the glumella. *E. B.* t. 848: *Parn. Gr.* t. 3.

Fields and way-sides, in England; scarcely indigenous in Scotland. ☉. 5—11.—Readily known by its annual root, attenuate panicles or spikes frequently of a purplish colour, and by the lanceolate acute glumes united to the middle, which are glabrous, or a little rough at the keel. *Glumella* quite smooth.

2. *A. pratensis* L. (*Meadow F.*) ; culm erect smooth, panicle cylindrical obtuse, glumes lanceolate acute hairy united at the base, awn twice the length of the glumella. *E. B.* t. 759 : *Parn. Gr.* t. 4.

Meadows and pastures, common. 24. 5, 6. — An excellent grass for cattle. Culm $1\frac{1}{2}$ to 2 ft. high. Panicle of a yellow-green colour, with silvery hairs. Glumes and glumellas much ciliate, and, as in all the species, remarkably compressed.

3. *A. bulbosus* L. (*tuberous F.*) ; culm erect smooth, panicle cylindrical acuminate, glumes acute slightly hairy free, awn twice the length of the glumella. *E. B.* t. 1249 : *Parn. Gr.* t. 76.

Salt-marshes in the east and south of England ; rare. In Cardiff marshes, Wales. 24. 5—7. — The inflorescence, though very dense, is not a true spike. The pedicels mostly bear single flowers, but often another very small abortive one. Glumes entirely distinct to the base. It is difficult to point out in words how this differs from *A. pratensis* ; at the same time Mr. Bentham prefers uniting it and *A. fulvus* to the next species.

4. *A. geniculatus* L. (*floating F.*) ; culm ascending bent at the joints smooth, panicle cylindrical obtuse, glumes united at the base obtuse slightly hairy and fringed, awn twice as long as the glumella and inserted near its base, anthers linear. *E. B.* t. 1250 : *Parn. Gr.* t. 5.

In pools, and wet and marshy places, sometimes on dry ground. 24. 5—8. — Anthers linear as in the rest of the genus, except in the next species. We are informed by Mr. H. C. Watson that Mr. Mitten found in July 1854 at Albourne Place, near Hurstpierpoint, a form which he calls *A. pronus*, and which he distinguishes from *A. geniculatus* (with which it was growing) by "barren stems short with subopposite leaves, fertile ones procumbent sprawling, ligule short truncate jagged, spikes thicker more spindle-shaped, glumes more acute." Of this we have not seen specimens : there is however in the above character nothing sufficiently positive to indicate it either as a distinct species or well-marked variety.

5. *A. fulvus* Sm. (*Orange-spiked F.*) ; culms ascending bent at the joints smooth, panicle cylindrical obtuse, glumes united at the base obtuse slightly hairy and fringed, awn the length of the glumella and inserted near its middle, anthers oval short. *E. B.* t. 1467 : *Parn. Gr.* t. 5. *A. geniculatus* Host *Gram. Austr.* ii. t. 32.

Ponds and ditches. Near Birmingham ; Norwich ; Essex ; Surrey ; Wrexham. Angus and Fifeshire. 24. 7. — Closely allied to *A. geniculatus*, but the awn is inserted higher up, and is much shorter, and the spike is more slender and paler. Anthers orange-coloured.

6. *A. alpinus* Sm. (*Alpine F.*) ; culm ascending smooth, pa-

nicle ovate obtuse, glumes ovate abruptly acute hairy united at the base, awns scarcely longer than the glumella, upper sheath inflated thrice as long as its lanceolate leaf. *E. B.* t. 1126: *Parn. Gr.* t. 4.

Loch-na-gar, Aberdeenshire. Sides of streams among the Clova and Canlochen mountains, frequent, particularly near Loch Wharral, banks of the Glashie burn, Glen Prosen, and the marshy ground between Clova and Loch Lee. 4. 7, 8.—This plant is at first sight distinguishable by its ovate *panicle* and short broad upper *leaf* with its inflated *sheath*, as also by the short awns. The late Mr. Brown discovered this on Loch-na-gar, not, as stated in the *Flor. Scotica*, on Ben Lawers, where it has not been met with.

5. PHALARIS Linn. Canary-grass. (Tab. VI. f. 4.)

Panicle spike-like or spreading. *Spikelets* laterally compressed. *Glumes* 2, nearly equal, erect, navicular, membranous, longer than the floret. *Glumellas* 2, awnless, glabrous or equally hairy, ultimately hardening and investing the *caryopsis*. *Styles* elongated. *Neuter florets* 1—2, rudimentary, sessile, and scale-like.—Named from φαλος, *shining*; *canary-seed* being very glossy.

* *Glumes winged on the keel. Panicle spike-like.*

1. * *P. Canariensis* L. (*cultivated C.*); *panicle* spike-like ovate, wing of glumes entire at the point, *neuter florets* 2 scale-like half the length of the perfect one. *E. B.* t. 1310: *Parn. Gr.* t. 9.

Naturalized in many parts of England and Scotland, but not a native of Europe. ☉. 7.—*Culm* 1—2 ft. high, glaucous. *Leaves* broad. *Spikes* handsome, composed of large, pale, yellow-green *glumes*, marked with deeper lines and singularly keeled at the back. *Canary-seed*, as we see it, is the seed of this plant invested closely with the pericarp, and that again with the hardened *glumellas*, thus occasioning its glossy appearance and pointed form.

[*P. paradoxa* L. an allied species, but with a blunt toothed wing to the glumes, and the two *neuter florets* rudimentary and much shorter than the perfect one, was found in a field near Swanage, Dorset, in 1847, but disappeared the next year. It is a south of Europe species.]

** *Glumes not winged at the keel, panicle with spreading branches.*
Digraphis.

2. *P. arundinacea* L. (*Reed C.*); *panicle* erect its branches patent, *florets* crested secund, *neuter florets* consisting of 1—2 small hairy valves. *E. B.* t. 402, and t. 2160. f. 2. (under *Calamag. stricta*): *Parn. Gr.* t. 9. Digraphis *Trin.*

Sides of lakes and rivers, common. 4. 7, 8.—A variety with

leaves variegated with white lines (Parn. Gr. t. 82) is frequent in gardens, and called *ribbon-grass*, *striped-grass*, or *gardener's garters*. Very different from the last in general habit, but not in essential character. *Panicle* large, 4—8 inches long, often brownish or purplish-green. Useful for securing river banks; it has a creeping *rhizome*, and is here and there tufted.

6. *PHLÉUM* Linn. Cat's-tail-grass. (Tab. VI. f. 6.)

Panicle spike-like. *Spikelets* laterally compressed. *Glumes* 2, nearly equal, parallel, acuminate or mucronate-aristate, longer than the floret. *Glumellas* 2, membranous, glabrous, awnless. *Styles* elongated. *Caryopsis* free.—Named from *φλεος*, or *φλεως*, formerly applied, it is supposed, to the *reed-mace* (*Typha*), to which our grass bears some distant resemblance.

* *Glumes truncate and scarious below the apex.*

1. *P. pratense* L. (common C., or *Timothy-grass*); panicle cylindrical, glumes truncate mucronate-aristate ciliate at the back at least twice as long as the awn, neuter floret wanting. *E. B. t.* 1076: *Parn. Gr. tt.* 6, 77, 78.

Meadows and pastures, very common. 4. 6—10. — *Rhizome* sometimes tuberous, and then the plant is the *P. nodosum* Linn. *Glumes*, as in all the species, extremely compressed, keeled with a dorsal green nerve running out into a spreading awn, scarcely half as long as the glume.

2. *P. alpinum* L. (*alpine C.*); panicle oblong or ovate-oblong, glumes truncate mucronate-aristate ciliate at the back scarcely as long as the awn, neuter floret wanting. [—*a.* awn ciliate, upper sheath scarcely inflated and about twice the length of the leaf, uppermost ligule oblong acute.] — *β.* awn scabrous, upper sheath inflated 3—4 times the length of the leaf, uppermost ligule very short obtuse. *E. B. t.* 519: *Parn. Gr. t.* 6. *P. commutatum* Gaud.

β. Banks of mountain-streams, rare. Breadalbane mountains; Feula burn, Canlochen Glen, Glashic burn, White Water above Glen Dole, Glen Fiadh, and rocks near Loch Brandy, Clova; Loch-na-gar and Braeriach, Aberdeenshire; Garvic moor, Invernesshire. 4. 7. — *Spike* purplish, variable in length, sometimes only half an inch, sometimes $1\frac{1}{2}$ inch long. The awns in our Scottish plant "are generally scabrous; but in some instances the scabrous processes towards the base are so elongated as to become ciliæ:" *Gardn.* The *var. a.* has not yet occurred in this country.

** *Glumes acuminate or contracted into a short point but not truncate.*

3. *P. ásperum* Jacq. (*rough C.*); annual, panicle cylindrical, glumes wedge-shaped tumid upwards mucronate rough, neuter

floret subulate, stem often branched. *Parn. Gr. t. 79.* *P. paniculatum Huds. : E. B. t. 1077.*

Rare in dry open fields, in the western and midland parts of England. ☉. 7.—*Culms* very leafy; the long *spikes* are partly concealed among them.

4. *P. Boehméri* Wibel (*purple-stalked C.*); perennial, panicle cylindrical, glumes linear-lanceolate suddenly acuminate-aristate hispidly ciliate on the keel above the middle, neuter floret subulate. *Parn. Gr. t. 80.* *Phalaris phleoides L. : E. B. t. 459.*

Dry sandy and chalky fields, rare; principally in Norfolk and Cambridgeshire. 4. 7.—*Culms* simple, erect, sparingly leafy, slender, shining purple.

[5. *P. *Michélii* All. (*Micheli's C.*); perennial, panicle nearly cylindrical, glumes lanceolate acuminate strongly ciliate at the back the whole length. *E. B. t. 2265 : Parn. Gr. t. 7.*

Rocky parts of the high mountains of Clova, Scotland: *G. Don. 21. 7, 8.*—Distinguishable at once from the preceding species by its gradually tapering *glumes*, and from the next by the perennial root. No one has succeeded in verifying Don's discovery; all the specimens communicated by him were from his garden at Forfar.]

6. *P. arenarium* L. (*Sea C.*); annual, panicle obovato-cylindrical, glumes lanceolate acute ciliate at the back above the middle. *Parn. Gr. t. 7.* *Phalaris Huds. : E. B. t. 222.*

On loose sand, especially near the sea. ☉. 5, 6.—*Culms* 5—6 inches high, many from the same root. *Glumellas* half as long as the *glumes*, membranous, truncate.

††† *Glumes* 2. *Styles* very short. *Stigmas* elongated, hairy or plumose.

7. LAGÚRUS Linn. Hare's-tail-grass. (Tab. VI. f. 7.)

Panicle spike-like. *Spikelets* laterally compressed. *Glumes* 2, lengthened into a long subulate point, fringed to the end, longer than the floret. *Glumellas* 2, membranous; outer one bifid, ending in 2 long bristles, with a dorsal twisted jointed awn. *Stigmas* slender, slightly hairy.—Named from *λαγώς*, a hare, and *οὐρα*, a tail.

1. *L. ovátus* L. (*ovate H.*): *E. B. t. 1334 : Parn. Gr. t. 88.*

Very rare. Sandy grounds in the north and west of Guernsey. ☉. 6.—The only species of the genus. Remarkable for its soft and pale heads of *flowers*, from among which the long *awns* are protruded.

8. PSÁMMA Beauv. Sea-reed. (Tab. VI. f. 5.)

Panicle spike-like. *Spikelets* laterally compressed. *Glumes* 2, nearly equal, keeled, membranous, diverging, longer than the

floret. *Glumellas* 2, subcoriaceous below, each with a tuft of short silky hairs at the base; outer one mucronulate or with a very short awn below the point. *Stigmas* cylindrical, plumose. *Neuter floret* 1, rudimentary and very minute, coriaceous, sessile, often obsolete. — Named from ψαμμη, sand.

1. *P. arenária* Roem. et Sch. (common *S.*, *Marram*, or *Mat-weed*); panicle cylindrical acuminate, glumes acute, hairs three times thicker than the floret. *P. littoralis* Beauv. *Arundo arenaria* L.: *E. B.* t. 520. *Ammophila arundinacea* Host: *Parn. Gr.* t. 8.

Sandy sea-shores, frequent. 4. 7.—*Rhizome* extensively creeping. *Leaves* long, narrow, rigid, involute, glaucous. *Culms* 2—3 ft. high. *Glumellas* far more rigid than the *glumes*; the larger one with a small sinus below the point.

†††† *Glumes* 2. *Styles* short. *Stigmas* thick, oval or oblong, plumose.

9. *MILIMUM* Linn. Millet-grass. (Tab. VI. f. 8.)

Panicle spreading. *Spikelets* somewhat dorsally compressed, awnless. *Glumes* 2, nearly equal, flattish, herbaceous, rather acute, scarcely longer than the floret. *Glumellas* 2, nearly equal, glabrous, ultimately hardening and enclosing the *caryopsis*. *Neuter florets* 0.—Named either from mille, a thousand, on account of its fertility; or, according to Théis, from the Celtic mil, a stone, from the hardness of its fruit.

1. *M. effusum* L. (spreading *M.*); panicle glabrous its branches subverticillate, leaves lanceolate, ligule obtuse. *E. B.* t. 1106: *Parn. Gr.* t. 17.

Moist shady woods. 4. 5—6.—*Culms* 3—4 feet high.—We have above, for the sake of simplicity, given this genus a character very different from what it ought actually to have, and which would remove it to near *Panicum* and the tropical genus *Paspalum*: it has only one true *glume*, the lower being entirely absent, while what we have called the second glume is a *neuter floret* composed of one *glumella* as large as, and precisely similar to, the *glume*.

10. *GASTRIDIMUM* Beauv. Nit-grass. (Tab. VI. f. 9.)

Panicle contracted, spike-like. *Spikelets* scarcely compressed. *Glumes* 2, acute, awnless, ventricose at the base, keeled upwards, membranous, much longer than the floret. *Glumellas* 2, membranous; outer one truncate or toothed at the end with (or without) a long straight awn below the point. *Neuter florets* 0.—Named from γαστρίδιον, a ventricle, or little swelling, as is seen at the base of the spikelet.

1. *G. lendigerum* Gaud. (awned *N.*); glumes lanceolate

acuminate shorter than the awn of the glumella. *Parn. Gr.* t. 86. *Milium L.*: *E. B.* t. 1107. *Agrostis australis L.* *Gastridium Beauv.*

Places where water has stagnated generally near the sea, rare. Gillingham and Cley, Norfolk; Little Baddow and Great Leighs, Essex; Isle of Sheppey and Erith, Kent; Surrey; Sussex; Isle of Wight (abundant); Weymouth, Dorset; Devon; Somerset; Gloucester. Glamorgan and N. Wales. γ . 6—10.—*Culms* 4—8 inches high, with numerous glossy *florets*, singularly swollen at the base.

11. ΣΤΙΦΑ *Linn.* Feather-grass. (Tab. VI. f. 11.)

Panicle erect, contracted (but not spike-like). *Glumes* 2, longer than the floret, membranous. *Floret* stipitate. *Glumellas* cartilaginous; outer one involute, terminated with a very long twisted awn; *awn* jointed at the base, and finally separating at the joint. *Neuter florets* 0.—Named from *στύπη*, *tow of flax*: from the flaxen or silky appearance of the common species of the gardens.

[*I. S. *pennáta L.* (common *F.*); leaves rigid setaceous grooved, awns exceedingly long feathery to the point. *E. B.* t. 1356: *Parn. Gr.* t. 87.

Limestone rocks overhanging the valley of Long Sleddale 6 m. N. of Kendal, Westmoreland: *Dr. Richardson* and *Mr. Lawson (Dillen.)*. γ . 6.—This beautiful grass, if it were not then an escape from a garden, has not been found since 1720.]

12. ΠΟΛΥΡΟΓΟΝ *Desf.* Beard-grass. (Tab. VI. f. 10.)

Panicle compact, spike-like. *Spikelets* laterally compressed. *Glumes* 2, equal, longer than the floret, each notched and with a long straight awn at the extremity. *Glumellas* unequal; the outer obtuse, usually awned almost at the very extremity. *Neuter florets* 0.—Named from *πολύς*, *many*, and *πωγων*, a *beard*; from the bearded appearance of the panicle.

1. *P. Monspeéliensis Desf.* (annual *B.*); awns 2—3 times as long as the rather obtuse rough glumes, root annual. *Parn. Gr.* t. 11. *Agrostis panicea Ait.*: *E. B.* t. 1704.

Rare, in moist pastures near the sea. Hampshire; Purfleet, Essex; Northfleet Hope, Kent; Cley, Norfolk; Gloucester; Durham (on ballast hills). Guernsey. Inverkeithing, Fifeshire. \odot . 6—8.—*Culms* usually 12—18 inches, but in Hampshire are sometimes found 4 feet high.

2. *P. littoralis Sm.* (perennial *B.*); awns equal in length to the almost glabrous acute glumes, root perennial. *Parn. Gr.* t. 81. *Agrostis Sm.*: *E. B.* t. 1251.

Muddy salt-marshes, very rare. Near Cley, Norfolk; coast of Essex; near the powder magazine, Woolwich; Saltmarsh pool, near Porchester, Hants (where the culms are 6 feet long and decumbent below). 4. 7.—The *glumes* are more acuminate than in *P. Monspeiensis*, and taper more gradually into the much shorter awn; outer *glumella* truncate; both toothed at the points.—Long supposed peculiar to England, but forms of it have been found in Germany, France, and Spain, although described under different names.

13. *CALAMAGRÓSTIS* Adans. Small-reed. (Tab. VIII. f. 12.)

Panicle loose or close. *Spikelets* laterally compressed. *Glumes* 2, nearly equal, longer than the floret, which is surrounded by scaly hairs at the base. *Glumellas* 2, membranous; outer one (sometimes shortly) awned at the point or back, very rarely awnless. *Neuter floret* wanting, or reduced to a short scale or pedicel.—Named from *καλαμος*, a reed, and *αγροστις*, a genus of grasses.

1. *C. Epigéios* Roth (*Wood S.*); panicle erect close, spikelets crowded unilateral, glumes subulate their keel rough, outer glumella with a dorsal awn from about its middle nearly as long as the glumes, hairs longer than the glumellas, neuter florets none. *Parn. Gr.* t. 16. *Arundo L.: E. B.* t. 403.

Moist shady places in England and Ireland, not very common. Dalrymple Wood, Ayr; Isle of Mull, Argyshire; Braemar, Aberdeenshire; Scotland. 4. 7.—Some authors still retain the name *Arundo* for this genus, but the Roman name *Arundo* was applied partly to *Phragmites*, partly to the *Donax* of the Greeks, not to any species of *Culamagrostis*.

2. *C. lanceolata* Roth (*purple-flowered S.*); panicle erect loose, spikelets scattered spreading, glumes lanceolate their keel smooth, outer glumella with a very short terminal awn between the two segments of the bifid point and scarcely longer than it, hairs longer than the glumellas, neuter florets none. *Parn. Gr.* t. 84. *Arundo Calamagrostis L.: E. B.* t. 2159.

Moist hedges, in fenny countries, rare. 4. 6.—*Panicle* much smaller and looser than the last; *spikelets* more purple and shining.

3. *C. stricta* Nutt. (*narrow S.*); panicle erect close, glumes lanceolate acute a little rough on the keel with 3 or more nerves, outer glumella bifid nearly as long as the upper glume longer than the hairs, with an awn equal to it in height inserted below the middle, neuter floret rudimentary, leaves of the barren shoots slender. *Parn. Gr.* t. 16. *C. Lapponica Hook.: Parn. Gr.* t. 85. *Deyeuxia Kunth. Arundo stricta Schrad.: E. B.* t. 2160.

Bogs and marshes, very rare. Oakmere in Delamere Forest, Cheshire. White Muir Marsh and Rescobie Loch, near Forfar, now

extirpated by drainage. Lough Neagh, and other places in the county of Antrim. 4. 6, 7. — *Culms* $1\frac{1}{2}$ —3 ft. high. *Leaves* of the culm broad; of the barren shoots narrower, rigid, and convolute when dry. *Panicle* 1—4 inches long, at first spreading, afterwards compact. *Hairs* not half the length of the *glumellas*. The Irish plant is *C. Lapponica* of the 4th and 5th editions of this work, but in the true *C. Lapponica* Hartm., the glumes are described as 1-nerved, the awn is bent, and the hairs are scarcely shorter than the *glumellas*.

14. AGRÓSTITIS Linn. Bent-grass. (Tab. VI. f. 13.)

Panicle loose. *Spikelets* laterally compressed. *Glumes* 2, acute, membranous, longer than the floret, awnless. *Floret* sessile, glabrous or with 1—2 tufts of very short hairs at the base. *Glumellas* 2, unequal; the inner sometimes wanting, the outer with or without an awn. *Caryopsis* free, oblong, or linear. — Name: given by the Greeks to grasses, from *αγρος*, a *field*, because they are so abundant in open places.

* *Upper glume* the smaller. *Neuter floret* 0.

1. *A. canina* L. (*brown B.*); branches of the panicle long slender erecto-patent, glumes unequal lanceolate rough on the keel, outer one 1-nerved, outer *glumella* crose at the end 5-nerved the middle nerve terminating below the middle at the insertion of the dorsal awn, inner wanting (or very minute?), leaves linear, sheaths smooth, ligule oblong acute. *E. B. t.* 1856: *Parn. Gr. t.* 15.

Moist heaths and moory places, abundant. 4. 6, 7. — Very variable in the size and colour of its flowers, purple or green, and in the length of the dorsal awn, which is sometimes included within the *glumes*, at other times considerably exserted. We have never seen more than one *glumella*, not even the rudiment of a second; but, as in the next species, Smith and Leers have detected an inner one.

2. *A. setacea* Curt. (*Bristle-leaved B.*); branches of the panicle short close spreading in flower, glumes unequal lanceolate rough on the keel, outer *glumella* crose at the end 4-nerved with a long geniculate twisted awn from its base, inner very minute, leaves setaceous, sheaths rough, ligule oblong acute. *E. B. t.* 1188: *Parn. Gr. t.* 83.

Very local, almost wholly confined to the dry downs of the extreme south and south-west parts of England, as Hampshire, Devonshire, and Cornwall. 4. 6, 7. — Larger *glumella* white, thin, and membranous, truncate at the top, with 4 green nerves, of which two, the lateral ones, project into mucros: its awn from the very base, rough, truly geniculate and twisted; inner one very small, truncate and toothed, accompanied on each side at the base by a tuft of white hairs.

3. *A. vulgaris* With. (*fine B.*); branches of the panicle smoothish its branchlets spreading after flowering, glumes nearly

equal, outer one rough on the keel above, outer glumella 3-nerved twice as long as the inner, ligule extremely short and truncate.—*a. mulica*; spikelets awnless. *E. B. t.* 1671: *Parn. Gr. t.* 12.—*β. aristata*; spikelets awned. *Parn. Gr. t.* 13. *A. canina* Willh.—*γ. pumila*; scarcely 3 inches high, spikelets often awned. *Parn. Gr. t.* 12. *A. pumila* Lighlf. *Scot. p.* 1081 (*fig. in title-page*).

Meadows, pastures, and banks, common everywhere. 4. 6, 7.—*Rhizome* creeping, throwing out many, mostly ascending culms, 1 or 1½ foot high. *Sheaths* usually smooth. *Panicle* purplish; *rachis* smooth, and the branchlets nearly so. *Glumes* lanceolate, glabrous, shining, rough on the back. *Glumellas* 2, thin, delicate, membranous, unequal; *outer one* a little shorter than the *glumes*, 3-nerved, tridentate, awnless in *α.*; bearing an awn of uncertain length in *β.*, but mostly short, arising from the central nerve a little below the middle of the back; *inner glumella* half as small, 2-nerved, bifid. Specimens of this species sometimes, though very seldom, occur, bearing the rudiment of a second floret upon a rather long stalk, in the same calyx.

4. *A. álba* L. (*Marsh B.*); branches of the panicle hispid its branchlets erect after flowering, glumes nearly equal, outer one rough on the keel all over, outer glumella 5-nerved twice as long as the inner, ligule elongated acute.—*α. culms* erect. *E. B. t.* 1189: *Parn. Gr. tt.* 13, 14.—*β. stolonifera*; culms with long prostrate scions. *Parn. Gr. t.* 14. *A. stolonifera* L.: *E. B. t.* 1532.—*γ. marilima*; culms procumbent rooting at the joints, panicle small lobed.

Pastures, road-sides, and in various other situations, abundant. 4. 7, 8.—Very closely allied to the last, and united to it by Mr. Bentham. *Culms* ascending, often rooting at the base, or throwing out scions (*stolones*). *Panicle* rather contracted, pale green or purplish, branchlets patent during flowering, more erect afterwards, and giving the panicle a compact appearance. *Glumes* like those in *A. vulgaris*, as are the *glumellas*; but the outer one has 5 nerves and as many teeth, and the inner one is only faintly 2- or 3-nerved at the base, nearly entire and obtuse at the extremity. In some specimens there is a short awn at the base of the outer *glumella*: this constitutes the *A. compressa* Willd.; and occasionally the flowers are viviparous, when it is the *A. sylvatica* Linn.

** Upper glume the larger, 3-nerved, as long as the lower glumella; lower 1-nerved. Outer glumella with a long awn from near its summit. Neuter floret filiform. Apera.

5. *A. Spica-vénti* L. (*spreading silky B.*); panicle spreading, glumes unequal lanceolate rough on the keel, outer glumella bifid with a subterminal long straight awn, inner one smaller with a small stalk-like neuter floret at its base, anthers linear-oblong. *E. B. t.* 951. Apera Beauv. *Anemagrostis* Trin.. *Parn. Gr. t.* 17.

Rare; in sandy fields which are occasionally flooded by the Thames and the Ouse; in Cheshire, Lancashire, and Yorkshire. ☉. 6, 7.—A beautiful grass, with very slender branches to its ample panicle, which is wavy and glossy like silk, well named by Parkinson "*Gramen agrorum venti spica*." Awn many times longer than the spikelet, rough. Inner glumella not much less than the outer; at its base is a little neuter floret, resembling a pedicel destitute of flower, which has a small tuft of hairs on each side.

6. *A. interrúpta* L. (*dense-flowered silky B.*); panicle long contracted narrow, branches half-whorled the lower ones remote, glumes unequal lanceolate rough on the keel, outer glumella bifid with a subterminal long straight awn, inner one smaller with a small stalk-like neuter floret at its base, anthers broadly oval. *Apera Beauv.: E. B. S. t. 2951. Anemagrostis Trin.*

Sandy pastures, rare. About Thetford; Pampisford and Chippenham, Cambridgeshire. ☉. 6, 7.—So closely allied to the last that Mr. Bentham has united them: it only differs by the contracted panicle and shorter anthers, agreeing in all the other characters.

** *Spikelets 2—3-flowered: perfect florets 2, very rarely 3; sometimes solitary, with 1—2 imperfect barren florets or a neuter one which is as large as the perfect one or sometimes (in Catabrosa, Molinia, and Melica) rudimentary. (Tab. VI. f. 14. VII. f. 15—22.) (Gen. 15—25.)*

† *Styles short. Stigmas plumose, much thicker than the style.*

15. CATABRÚSA Beauv. Whorl-grass. (Tab. VI. f. 14.)

Panicle spreading. *Spikelets* scarcely compressed, ovate, awnless, with 1—3 perfect florets and often 1—2 neuter ones. *Glumes* 2, membranous, 1-nerved, much shorter than the spikelets, convex on the back, very obtuse, lower one the smaller, upper crenate or toothed at the end. *Glumellas* 2, coriaceous, membranous only at the extremity, 3-ribbed, truncate and erose at the end, nearly equal. *Caryopsis* free.—Named from *καταβρωσις*, a gnawing; from the erose extremity of the glumes.

1. *C. aquática* Beauv. (*Water W.*); panicle with whorled patent branches, leaves broadly linear obtuse.—*α.* larger, spikelets 2—3-flowered. *Parn. Gr. t. 20. Aira L.: E. B. t. 1557.—β. littoralis*; small, spikelets 1-flowered. *Parn. Gr. t. 102.*

Banks of rivers, and floating in pools of water.—*β.* on the sea-shore in the west of England and Scotland. *γ.* 5, 6.—This is very different in habit and generic character from *Aira*, and from any other grass with which we are acquainted. Mertens places it in *Poa* among those with long spikelets, which now, according to Smith, form the

genus *Glyceria*; but it does not naturally combine with them. *Rhizome* very long, branched, floating, jointed, sending from the joints fibrous *radicles* below, and *culms* above, a foot or more long, stout, with short broad *leaves*. *Glumes* with only a single nerve or midrib, thin and membranous, broadly oval, obtuse. *Glumellas* of a thick texture, brownish-green, white and diaphanous at the blunted extremity.

16. *AÍRA* Linn. Hair-grass. (Tab. VII. f. 15.)

Panicle lax (rarely contracted). *Spikelets* laterally compressed, with 2 (or rarely 3 or only 1) perfect *florets* and sometimes a neuter one which is usually rudimentary. *Glumes* 2, unequal, about as long as the *florets*, the outer 1-nerved. *Glumellas* membranous and thin, hairy at the base; the outer one awned at the back, with or without faint lateral nerves, toothed or entire or bifid but not setigerous at the end. *Caryopsis* glabrous. — Named from *αιρω*, to destroy. This name was anciently applied to the *Lolium temulentum* (bearded darnel), on account of its injurious effects, and now to the present genus of Grasses, although it has little in common with it.

* *Outer glumella erose or toothed at the end. Caryopsis free. Neuter floret subulate.*

1. *A. cæspitosa* L. (tufted *H.*); panicle diffuse, branches scabrous, glumes slightly rough on the midrib, upper 3-ribbed; florets hairy at the base rather longer than the glumes, awn straight inserted near the base of and seldom exceeding in length the outer glumella.—*a. vulgaris*; sheaths of leaves rough, awn the length of the floret. *E. B. t.* 1453: *Parn. Gr. tt.* 23, 104.—*β. brevifolia*; radical leaves short, sheaths smooth, panicle small, awn the length of the floret. *Parn. Gr. t.* 106.—*γ. longiaristata*; sheaths smooth, awn projecting one third beyond the floret. *Parn. Gr. t.* 105.

Moist shady places, and borders of fields, plentiful.—*β.* and *γ.* on the mountains. 4. 6, 7.—Much tufted. *Culms* 2—4 ft. high. *Leaves* linear, acuminate, rough on the margin. *Ligule* long, acute, entire. *Panicle* large, silvery-gray or greenish, much branched, smaller and purplish in *β.* *Spikelets* acute. *Glumes* unequal, lanceolate, subglabrous, rather acute, erose. *Florets* with a few longish hairs at the base, upper ones pedicellate; their *glumellas* ovate, obtuse, erose, the outer one with 4 short teeth, the inner bifid. *Var. β.* is frequently collected for the next species, from which it can only be certainly known by the position of the awn; *var. γ.* has sometimes but one fertile floret, when it is *A. conglomerata* Don.

2. *A. alpina* L. (smooth Alpine *H.*); panicle subcoarctate, branches and pedicels perfectly or nearly smooth, glumes smooth on the midrib, upper 3-ribbed, florets as long as the glumes,

awn (in the flowering specimens) inserted above the middle and scarcely exceeding the glumes in length. *Parn. Gr. tt. 23, 109. A. lævigata Sm.: E. B. t. 2102.*

Moist rocks on the higher Scottish mountains and in Wales, usually viviparous. 4. 6, 7.—Perhaps a mere variety of the last species, from some states of which it is only to be distinguished by artificial characters. About 1 foot high, very smooth. *Leaves* only scabrous to the touch on the upper side, short. *Panicle* rather small, branches erect; the lower ones, when viviparous (which they mostly are), patent and even drooping. *Spikelets* not numerous, larger than in *A. cæspitosa* α , and more resembling, as does the whole plant, the *var. β* . and *A. flexuosa*. *Glumes* equal, quite smooth. *Florets* with a short tuft of hairs at the base. *Glumellas* lanceolate, not compressed, outer one slightly toothed at the end. *Awn* flat at the base and usually twisted in flowering specimens; but in viviparous ones straight and subterminal, often a mere point, while the florets are almost quite glabrous at the base.

3. *A. flexuosa* L. (*waved H.*); panicle (when flowering) diffuse, glumes roughish on the midrib, upper with a central and 2 obscure lateral ribs, florets villous at the base as long as the glumes, awn bent slightly twisted inserted near the base of but much longer than the glumella, leaves setaceous.—*a.* lower floret scarcely longer than the glume. *E. B. t. 1519: Parn. Gr. tt. 24, 107.*— *β . montana*; more slender, lower floret longer than the glume. *Parn. Gr. t. 108.*

Heaths and hilly places; abundant.— *β .* Highland moors, among heather. 4. 7.—Habit of the last, but taller. *Florets* larger than in the two preceding species, and with the awns protruded considerably beyond the *glumellas*: the last are much the same in all the three. *Ligule* of the uppermost leaf bifid.

** *Outer glumella bifid, ultimately somewhat cartilaginous and enclosing the caryopsis. Awn bent, twisted. Rudimentary neuter floret none. Glumes both 1-nerved.*

4. *A. caryophyllæa* L. (*silvery H.*); panicle divaricate, spikelets obtuse at the base, florets scarcely villous at the base shorter than the glumes, awn inserted below the middle longer than the glumes, leaves setaceous. *E. B. t. 812: Parn. Gr. t. 24.*

Gravelly hills and pastures, frequent. ☉. 6, 7.—*Culms* tufted, 2—6 or 8 inches high. *Leaves* short, few. *Panicle* trichotomous. *Florets* silvery-gray. *Glumes* nearly equal, ovate, gibbous at the base, 1-nerved, the upper part pellucid and white. *Glumellas* scabrous at the back, ultimately brown, firm, and inclosing the *caryopsis*; apex bifid.

5. *A. præcox* L. (*early H.*); panicle contracted oblong, spikelets somewhat acute at the base, florets scarcely villous at the base about as long as the glumes, awn inserted below the

middle and usually near the base longer than the glumes, leaves setaceous. *E. B.* t. 1296: *Parn. Gr.* t. 25.

Sandy hills and pastures. ☉. 5, 6.—*Culms* tufted, 1—3 inches high. *Panicle* few-flowered, pale silvery-green. *Glumes* ovato-lanceolate, scabrous; when seen under the microscope both are 1-nerved; *glumellas* narrow, acuminate, scabrous, the point bifid.—These two last species have the habit of *Aira*, but are scarcely distinct in character from the 2-flowered species of *Avena*, except by both glumes having only a central nerve.

*** *Outer glumella entire at the end; awn jointed in the middle with a tuft of hairs at the joint, upper portion clavate. Neuter floret wanting. Glumes both 1-nerved. Corynephorus.*

6. *A. canescens* L. (*gray H.*); panicle rather dense, florets shorter than the calyx, awn clavate shorter than the calyx, leaves setaceous. *E. B.* t. 1190: *Parn. Gr.* t. 110. *Corynephorus Beauv.*

On the sandy sea-coasts of Norfolk and Suffolk. Jersey. 4. 7.—Remarkable in this genus for having its awn clavate, and bearing at the joint a tuft of hairs; a character which distinguishes it from all other British grasses.

17. *MOLÍNIA Schrank. Molinia.*

Panicle somewhat contracted or spreading. *Spikelets* awnless, oblong-cylindrical, with 1—5 (or more) *perfect florets* and usually a subulate rudimentary upper *neuter* onc. *Glumes* 2, acute, shorter than the florets, unequal, lower one 1-nerved. *Glumellas* 2; outer onc convex on the back, glabrous, entire at the end, ultimately cartilaginous and inclosing the free *caryopsis*.—Named in honour of *Don Giovanni Ignatio Molina*, who wrote an account of the natural history of Chili, published in 1782.

1. *M. cærúlea* Mœnch (*purple M.*); panicle erect somewhat contracted, spikelets erect, outer glumella usually 3-nerved, culm with a single node near the base.—*α.* panicle bluish-purple, spikelets 2—3-flowered, outer glumella 3-nerved. *Parn. Gr.* tt. 20, 103. *Melica* L.: *E. B.* t. 750.—*β.* panicle pale green, spikelets 1-flowered, outer glumella 3—5-nerved. *Molinia depauperata* Lindl.: *Parn. Gr.* t. 19. *Melica alpina* Don.

Wet heathy places and moors, frequent.—*β.* Clova mountains at an elevation of 3000 feet. 4. 7, 8.—*Culms* 1—2 ft. high or more. *Leaves* long, linear, and acuminate. *Panicle* 2—8 inches in length, bluish-purple, rarely green. *Glumes* lanceolate, nearly equal. *Florets* generally 2 perfect and 1 sterile; but if *M. altissima* of Link be a variety, as supposed by Kunth, the spikelets are sometimes many-flowered. *Anthers* large, purple.

18. MÉLICA Linn. Melic-grass. (Tab. VII. f. 16.)

Panicle lax. *Spikelets* ovate, awnless, with 1—2 perfect *florets* and a club-shaped rudimentary neuter one. *Glumes* 2, nearly equal, shorter than the *florets*, several-nerved. *Glumellas* 2; outer one convex on the back, entire at the end, ultimately cartilaginous and enclosing the free *caryopsis*.—Name: *Melica* or *Melliga*, given in Italy to the *Sorghum vulgare* on account of the sweet flavour of its stem (*mel*, honey), was applied by Linnæus to this somewhat allied genus.

1. *M. nūtans* L. (*Mountain M.*); *panicle* a nearly simple lax secund raceme, *spikelets* drooping ovate 2-flowered. *E. B.* t. 1059: *Parn. Gr.* t. 18.

Woods in somewhat mountainous countries, especially in the north of England and Scotland. *4.* 5, 6.—One foot or more high, leafy. *Leaves* linear-lanceolate, flat; *ligule* short and obtuse. *Glumes* ovate, convex, nerved, deep purple-brown, margin pale. Outer *glumellas* large, cartilaginous, unequal, nerved. Between the two perfect *florets* is the rudiment of a third, which is pedicellate, consisting of 2 hardened *glumellas* without either pistil or stamen.

2. *M. uniflora* Retz (*Wood M.*); *panicle* branched slightly drooping, *spikelets* erect ovate with only one glabrous perfect *floret*. *E. B.* t. 1058: *Parn. Gr.* t. 18.

Shady woods, frequent. *4.* 5—7.—Imperfect *floret* on rather a long stalk. *Leaves* broader than the last, and whole plant larger. *Scale* of one piece, orange-coloured, thick, “covered by the outer *glumella*.” *Wilson*.

19. HÓLCUS Linn. Soft-grass. (Tab. VII. f. 17.)

Panicle lax. *Spikelets* laterally compressed, 2-flowered. *Glumes* 2. Lower *floret* perfect, triandrous: *glumellas* 2, outer one awnless or very rarely awned. Upper *floret* barren, triandrous: *glumellas* 2; outer one awned. *Caryopsis* covered by the indurated *glumellas*.—Named ὄλκος, from ἐλκω, to *extract*; because it was supposed to have the property of drawing out thorns from the flesh!

1. *H. móllis* L. (*creeping S.*); *glumes* acuminate, awn of barren *floret* exerted at length geniculate seabrous all over, culm with spreading hairs at the nodes, rhizome creeping. *E. B.* t. 1170: *Parn. Gr.* tt. 21, 22.

Pastures and hedges, common. *4.* 7.—Mr. Wilson well observes that this species is distinguished by the acute (or almost acuminate) *glumes* and bearded nodes of the culm.

2. *H. lanátus* L. (*Meadow S.*); *glumes* rather obtuse mucronate, awn of barren *floret* included within the *glumes* ultimately

curved glabrous except near the end, culms uniformly downy; root fibrous. *E. B.* t. 1169: *Parn. Gr.* t. 21.

Meadows, pastures, and woods; common. \mathcal{L} . 6, 7.—Much resembling the last in general appearance, but clothed with a softer and more abundant pubescence.

20. *ARRHENATHERUM* Beauv. False Oat-grass.

(Tab. VII. f. 18.)

Panicle lax. *Spikelets* laterally compressed, 2-flowered, with an upper rudimentary neuter one. *Glumes* 2, nearly equal membranous, as long as the florets. *Lower floret* barren, triandrous: *glumellas* 2; outer one with a long twisted geniculate awn above the base. *Upper floret* perfect, triandrous: *glumellas* 2; outer one with a short straight bristle below the point. —Named from ἀρόνη, *male*, and αἶνη, an *awn*. This genus has altogether the habit of *Avena*, from which it differs in the number and structure of its florets.

1. *A. avenaceum* Beauv. (*common F.*); leaves flat. *Holcus Scop.*: *E. B.* t. 813. *Avena elatior* L. — *a.* culm inconspicuously knotted at the base, its nodes usually glabrous. *Parn. Gr.* t. 25.— β . *bulbosum*; culm with large knots or bulbs at the base, its nodes downy. *Parn. Gr.* t. 26.

Hedges and pastures, frequent. \mathcal{L} . 6, 7.—The *Arrh. bulbosum* Dunal and Lindl. (*Avena nodosa* of Cullum and *Av. precatória* Thuill.) is merely a variety with the lowest internodes of the culm much swollen, so as to resemble knots or bulbs. *Culm* 2—3 feet high. *Panicle* long, loose. *Spikelets* greenish-brown.

21. *KOELÉRIA* Pers. Koeleria.

Panicle spike-like, subcylindrical. *Spikelets* laterally compressed, distichous, with 2 or more perfect florets. *Glumes* 2, unequal, membranous, keeled, shorter than the florets. *Glumellas* 2, membranous, naked at the base; outer one keeled, entire, pointed or with a straight subterminal bristle. *Caryopsis* free. —Named in honour of *George Louis Koeler*, author of a work on German and French Grasses, published in 1802.

1. *K. cristata* Pers. (*crested K.*); panicle interrupted below, outer glumella acute 3-ribbed, leaves narrow ciliate at the margins or hairy. *Aira* L.: *E. B.* t. 648. *Airochloa* Link: *Parn. Gr.* t. 19.

Dry pastures; most frequent in the north, and especially near the sea. \mathcal{L} . 6, 7.—*Culm* 6—8 inches high, sometimes more. *Leaves* linear, short in dry places, but sometimes as long as the culm in damp situations. *Leaves* and *spikelets* very variable as to pubescence, being sometimes glabrous, sometimes villous. *Glumes* acute or slightly

acuminate, lanceolate, compressed. Inner *glumella* white, delicate, reticulate, bifid, with two longitudinal folds.

†† *Styles very short. Stigmas elongated, filiform, united to the middle.*

22. *SESLERIA Scop.* Moor-grass. (Tab. VII. f. 20.)

Panicle spike-like, somewhat terete or slightly unilateral. *Spikelets* laterally compressed, with 2 or more perfect florets. *Glumes* 2, somewhat unequal, 1-nerved, about as long as or longer than the florets. *Glumellas* 2, naked at the base, membranous; outer one keeled, incise and with a short bristle at the end. *Caryopsis* free. *Style* very short. *Stigmas* filiform, papillose, united to above the middle.—Named after *Leonard Sesler*, an Italian physician and botanist.

1. *S. cærúlea Scop.* (*blue M.*); panicle ovate bracteate slightly unilateral, outer *glumella* with 2—4 teeth at the apex the midrib rough and terminating in a short bristle. *E. B.* t. 1613: *Parn. Gr.* t. 27. *Cynosurus L.*

Mountains in the north of England, Scotland, and west of Ireland; especially abundant in limestone regions. 4. 4—6.—One of our earliest grasses, and a very beautiful one. The *roots* much tufted. *Culms* 6—18 inches high. *Leaves* linear, obtuse, with a minute rough point. *Spike* of a shining bluish-gray, with large yellow *anthers* tipped with purple. *Spikelets* generally in pairs, oblong-ovate, the lower ones with an ovate ciliate and toothed bractea at the base. *Glumes* ovato-lanceolate, 3-toothed, middle tooth lengthened into an awn and often bifid, pubescent at the keel and margin. *Florets* longer than the *glumes*. Outer *glumellas* 1-ribbed, pubescent or ciliate, with 1 or 2 teeth on each side of the bristle or short awn; inner one bifid at the point.

††† *Styles elongated. Stigmas plumose, much broader than the style.*

23. *HIERÓCHLOE Gmel.* Holy-grass. (Tab. VII. f. 19.)

Panicle mostly lax. *Spikelets* laterally compressed, 3-flowered, without neuter florets. *Glumes* 2, nearly equal, membranous, about as long as the spikelet. *Central floret* perfect, diandrous; *glumellas* 2, permanently membranous. *Lateral florets* barren, triandrous. *Caryopsis* free.—Named from *ιερος*, *sacred*, and *χλοα*, or *χλον*, a *grass*; so called because, in some parts of Prussia, it is strewed before the doors of the churches on festival-days.

1. *H. boreális R. et S.* (*Northern H.*); panicle subsecund, peduncles glabrous, florets awnless, outer *glumellas* ciliate at the margin. *E. B. S.* t. 2641: *Parn. Gr.* t. 31. *Holcus Schrad.* *Holcus odoratus L.*

In a narrow mountain valley, called *Kella* (Cally?) in Angushshire: *G. Don*. Near Thurso, Caithness: *Mr. Robert Dick* (1854). 4. 5.—About 1 foot high, glabrous. *Leaves* linear-acuminate. *Panicle* brownish, glossy. *Spikelets* broadly ovate. *Glumes* ovate, acute, rather unequal, sometimes a little serrate at the point. *Florets* rather longer than the *glumes*; the outer *glumellas* are of a firmer texture, scabrous when highly magnified, distinctly fringed at the margin, the point sharp, but not awned. *Central floret* the smallest. Smell resembling that of *Anthoxanthum odoratum*. *Don's* station has not been verified; but the plant is abundant near Thurso.

24. *PÁNICUM* Linn. Panic-grass. (Tab. VII. f. 21.)

Spikelets flat in front, convex on the back, 2-flowered, without bristles at the base, usually on one side of the partial *rachis*, and arranged in a compound spike, raceme, or panicle. *Glumes* 2; lower one (in front) small, upper as long as the spikelet. *Lower* (or *anterior*) *floret* as long as the upper, barren and triandrous or neuter: *glumellas* 1—2; outer with the texture of and as long as the upper glume. *Upper floret* perfect; *glumellas* 2, cartilaginous, enveloping the *caryopsis*, neither awned nor setigerous, very rarely mucronulate.—Named from *panis*, bread; the seeds of some species being used for bread.—The British species belongs to that section called by Beauvois *Echinochloa*, and distinguished by the *spikelets in a compound raceme, the upper glume and lower glumella of the sterile floret with a long awn-like bristle*.

1. *P.* (Ech.) **Crus-gállí* L. (*loose P.*); “eulms erect tufted at the base, leaves linear acuminate more or less scabrous on the upper side, sheaths glabrous, ligule none, spike compound erect, partial ones alternate unilateral somewhat close-pressed to the compressed triquetrous common rachis, spikelets ovate turgid hispid (greenish), lower glume broadly cordate-ovate with an embracing base mucronate thrice shorter than the spikelet, upper ovate acuminate 5-nerved, neuter floret with 2 glumellas the lower with a longish bristle, caryopsis even gibbous ovate with a hispid point.” *E. B.* t. 876. *Echinochloa* Beauv.: *Parn. Gr.* t. 67.

Fields near London. Waste ground near Thetford, Norfolk. ☉. 7.—The whole group called *Echinochloa* is in so great confusion, that we scarcely know what the naturalized British species really is, or whether there are not several. The above character of the true *P. Crus-galli* by Nees v. Esenbeck is derived from foreign specimens.

25. *SETÁRIA* Beauv. Bristle-grass. (Tab. VII. f. 22.)

Panicle compound, somewhat cylindrical, spike-like. *Spikelets* flat in front, convex on the back, 2-flowered, 1—3 together,

surrounded by an involucre of bristles (abortive spikelets) and falling away from it. *Glumes* 2, awnless; lower one small, upper as long as the spikelet. *Lower floret* as long as the upper, barren and triandrous or neuter: *glumellas* 1—2; outer one with the texture of the upper glume and as long. *Upper floret* perfect: *glumellas* 2; outer the largest, cartilaginous, enveloping the *caryopsis*. — Named from *seta*, a *bristle*. — To this genus the true *Millets* belong.

1. *S. *verticilláta* Beauv. (*rough B.*); panicle lobed below branches whorled, bristles of the involucre rough with reversed teeth, outer glumella of the fruit nearly even, lower floret neuter with 1 glumella. *Parn. Gr.* t. 69. *Panicum L.*: *E. B.* t. 874.

In cultivated fields, about London and Norwich. ☉. 7, 8.

2. *S. *viridis* Beauv. (*green B.*); panicle continuous, bristles of the involucre rough with erect teeth, outer glumella of the fruit nearly even, lower floret neuter with one glumella. *Parn. Gr.* t. 68. *Panicum L.*: *E. B.* t. 875.

Fields about London, Thetford, and Norwich. ☉. 7, 8.

3. *S. *gláúca* Beauv. (*glaucous B.*); panicle continuous, bristles of the involucre rough with erect teeth, outer glumella of the fruit conspicuously wavy wrinkled transversely, lower floret triandrous with 2 glumellas.

Weybridge, Surrey: *Mr. Borrer*. Hoddesdon, Hertfordshire. ☉.

9.—*Culm* ascending, branched, angled under the inflorescence. *Leaves* linear-lanceolate, bearded at the base. *Spikelets* about 2 in each involucre, and only half its length; *bristles* many, rigid. *Lower floret* with 3 *stamens* and 2 *glumellas*. Distinguished by the shorter and more rigid bristles and larger spikelets from *S. penicillata*, which, along with *S. Italica*, will, we have no doubt, be also found ere long in our cultivated fields.

*** *Spikelets with 3 or more, occasionally with only 2, fertile flowers. Glumes 2.* (Tab. VII. f. 23—26, and VIII. f. 27—31.) (Gen. 26—34.)

† *Styles short. Stigmas much thicker and often longer than the styles.*

26. *Póá* Linn. Meadow-grass. (Tab. VII. f. 23.)

Panicle lax or contracted, rarely a simple or compound spike. *Spikelets* awnless, ovate or linear and compressed, or subcylindrical, with 3 or more (rarely 2) fertile florets. *Glumes* 2, more or less membranous and unequal, shorter than the florets. *Glumellas* 2 herbaceous; outer one subovate, bluntish, rarely tipped with a minute point. *Caryopsis* free.—Name: *ποά*, grass or *pasturage*, from *παω*, to *feed*; the whole genus affording an abundant pasturage for cattle.

* *Spikelets linear or subcylindrical (rarely ovate, with the glumes 1-nerved). Florets convex on the back at the base.*

† *Outer glumella with 7 prominent ribs and a scarious margin, neither hairy on the ribs, nor webbed at the base, subcylindrical, obtuse. Glumes 1-nerved, conspicuously unequal. Glyceria Br.*

1. *P. aquatica* L. (*Reed M.*); panicle erect large and much branched spreading, branches scabrous, spikelets linear oblong of about 5—10 florets, outer glumella with 7 ribs, sheaths of leaves cylindrical. *E. B. t.* 1315: *Parn. Gr. t.* 44. *Glyceria Sm.*

Sides of rivers, ponds, and ditches. 4. 7, 8.—*Rhizome* creeping. *Culms* 4—6 feet high, erect. *Leaves* erect, linear-lanceolate, rough on the edges. *Ligule* short, obtuse. *Glumes* small, ovate, obtuse. *Outer glumella* twice as large as the glumes; inner narrower and bifid at the point.

2. *P. fluitans* Scop. (*floating M.*, or *true Manna croup-grass*); panicle unilateral or nearly erect, spikelets linear of 7—20 florets, outer glumellas obtuse or slightly acute with 7 ribs and short intermediate ones at the base, sheaths of leaves compressed. *Festuca L. Glyceria R. Br.*—*α.* sheaths of leaves even or striate, panicle spreading in flower but erect in fruit, rachis smooth, outer glumella nearly thrice as long as broad, anther $4\frac{1}{2}$ —5 times longer than broad. *Parn. Gr. t.* 95.—*β.* sheaths of leaves sulcate, panicle always spreading, outer glumella scarcely twice as long as broad, anther about three times longer than broad. *E. B. t.* 1520: *Parn. Gr. t.* 45. *Glyceria plicata Fries. G. pedicellata Towns.* in *Ann. Nat. Hist.* 2nd ser. v. p. 105.

Ditches and stagnant waters, abundant. 4. 7, 8.—A variable species, sometimes confounded with *Festuca pratensis β.*, but distinguished by the 1-nerved glumes and 7-ribbed glumellas. *Culms* ereeping, or floating and rooting near the base; flowering ones 1—3 ft. high, thick and succulent. *Leaves* linear-lanceolate, keeled, more or less folded at the keel when young; lower ones floating. *Sheaths* of *α.* sometimes so striate as almost to appear sulcate. *Ligule* oblong, pointed. *Panicle* with the *branches* more or less spreading in flower, adpressed (in *α.*) or divaricate (in *β.*) when in fruit, nearly simple (forming a raceme or loose spike) or with simple or compound branches. *Glumes* unequal, small, ovate, obtuse. *Glumellas* ovate-oblong, sometimes thrice as long as the glumes, but variable in that respect; outer ones scabrous, sometimes toothed. *Hypogynous scales* thick, fleshy, usually united into one piece. There are two forms of *β.*; one (*G. plicata* Fr.) with the branches of the panicle simple or compound, and small sessile or shortly stalked spikelets; the other (*G. pedicellata* Towns., and perhaps *P. fluitans* Parn. Gr. t. 45) with the panicle unilateral and the branches always simple, and spikelets nearly as large as in *α.* on smooth and usually slender stalks. All these and other forms, although distinguished from each other with

difficulty, particularly when dried, are readily so from any other species of the genus.

†† *Outer glumella with 5 usually faint but distinct nerves, cylindrical below, often keeled at the apex. or with a very minute mucro, not webbed at the base. Glumes 3-nerved, unequal. Glyceria Sm. Sclerochloa Beauv.*

‡ *Creeping, or with rooting ascending scions.*

3. *P. marítima* Huds. (*creeping Sea M.*); panicle erect sub-coarctate (rigid), spikelets linear of 5—10 obtuse apiculate florets which are faintly 5-nerved, the midrib reaching to the point, leaves usually convolute. *E. B. t.* 1140: *Parn. Gr. tt.* 42, 99. *Glyceria Sm. Sclerochloa Lindl.*

Sea-coast, frequent. 4. 7.—*Culms* 8—15 inches high, rigid, glaucous. Lower branches of the panicle usually in pairs, but sometimes 3—5 in luxuriant specimens. *Leaves* involute, somewhat pungent. *Ligule* ovate, bluntish. *Glumes* rather acute, shorter than the lowest contiguous floret, with 3 ribs. *Outer glumella* firm, purplish, slightly silky at the base, on the central and two lateral ribs.

†† *Root tufted. Scions wanting. Rachis and branches of the panicle rough.*

4. *P. distans* L. (*reflexed M.*); panicle spreading, branches at length deflexed, spikelets linear of about 5 (3—6) obtuse florets which are faintly 5-nerved, the midrib not reaching to the apex, leaves mostly plane, stem decumbent at the base. *E. B. t.* 986: *Parn. Gr. tt.* 41, 96, 97. *Glyceria Sm. Sclerochloa Bab.*

Sandy ground, principally near the sea. Near Dublin. 4. 7, 8.—One foot high. *Leaves* linear, plane, not pungent. *Ligule* short, obtuse. Branches of the panicle deflexed, slender; lower ones usually 4—5 together. *Spikelets* not nearly so long as in the last species. *Glumes* much shorter than the contiguous florets, unequal, obtuse, obscurely 3-nerved. *Outer glumella* silky on the midrib, with two lateral nerves at the base. Allied to the last, but distinct in the panicle, smaller spikelets, and tufted root without rooting scions.

5. *P. Borréri* Hook. (*Borrer's Sea M.*); panicle spreading, in fruit ascending and patent, spikelets linear of 4—7 florets, outer glumella obsoletely 5-nerved obtuse with a minute point formed by the excurrent midrib, leaves flat. *Parn. Gr. t.* 98. *Glyceria Bab. in E. B. S. t.* 2797. *G. conferta Fries. Sclerochloa Borreri Bab.*

Brackish places in the south-east of England, not uncommon, often growing with *P. procumbens* and *P. distans*. 4?. 7.—“May be distinguished from *P. distans* by its ascending branches when in fruit, the spikelets seldom more than 4-flowered, the exterior glumella pointed, and its dorsal nerve extending to the apex;—from *P. pro-*

cumbens by its patent branches, its spikelets not more than half the size, and the erect culm; — from *P. maritima* by the patent branches, its spikelets about half the size, and the flat leaves:” *Bab.* Intermediate between *P. distans* and *P. procumbens*, but chiefly allied to the former (of which it is perhaps only a variety) by the larger and looser panicles, and obscure nervation of the outer glumella.

6. *P. procumbens* Curt. (*procumbent Sea M.*); annual, panicle compact ovato-lanceolate disticho-secund (rigid), spikelets linear-lanceolate of about 4 florets, outer glumella 5-ribbed obtuse with a minute point formed by the excurrent midrib, leaves flat with inflated sheaths. *E. B. t.* 532: *Parn. Gr. t.* 42. *Glyceria* Sm. *Sclerochloa* Beauv.

Salt-marshes, in various places, apparently not uncommon in England. Very rare in Scotland and Ireland. ☉. 6, 7. — *Root* fibrous. *Culms* procumbent, 6—8 inches long, glaucous. *Leaves* linear, obtuse. *Ligule* short, very blunt. *Panicle* about 2 inches long; branches patent, distichous, their *spikelets* secund. *Glumes* smaller than the florets, obtuse, strongly ribbed. *Florets* oblong, distant upon the partial rachis, slightly silky at the base.

††† *Outer glumella with 5 faint but distinct nerves, membranous, cylindrical below, naked on the nerves and at the base. Glumes 1-nerved, unequal.* Catapodium.

7. *P. rigida* L. (*hard M.*); annual, panicle lanceolate (or sometimes a linear simple spike-like raceme) disticho-secund rigid, spikelets linear acute of 7—10 florets, outer glumella faintly 5-nerved obtuse with a mucro, glumes acute unequal, upper one reaching to the base of the third floret. *E. B. t.* 1371: *Parn. Gr. t.* 43. *Glyceria* Sm. *Sclerochloa* Panzer.

Walls, rocks, and dry barren soils, frequent. ☉. 6. — *Whole plant* very rigid and wiry, 3—6 inches long, ascending or erect. *Leaves* rigid, linear, setaceous. *Ligule* oblong, incise. *Rachis* angled, sometimes at once bearing the spikelets (when it much resembles the next species), but more usually throwing out branches. *Glumes* nearly as long as the contiguous florets. *Florets* linear-oblong, rather distant, smooth, bluntish; outer *glumella* 5-nerved; the two lateral nerves broad with a white line down the middle, the two intermediate ones very faint.

8. *P. loliacea* Huds. (*dwarf Wheat M.*); annual spike rigid usually simple unilateral (rarely branched), spikelets linear-oblong of about 8—12 florets, outer glumella faintly 5-nerved obtuse with a mucro, glumes obtuse nearly equal, upper one reaching to the base of the fourth floret. *Parn. Gr. t.* 43. *Triticum* Sm.: *E. B. t.* 221. Catapodium Link. *Sclerochloa* Woods.

Sandy sea-shores of Norfolk, Suffolk, and Essex. North Wales and Isle of Man. East coast of Scotland, and Galloway. ☉. 6, 7. —

Stiff and wiry (as much so as *P. rigida*, which it resembles), branching from the very base, 3—4 inches high. *Leaves* linear, rigid, plane. *Spikelets* more or less distant, secund, lower ones sometimes compound. *Rachis* grooved between the joints on the side next the spikelet, as in *Triticum* and *Brachypodium*.

** *Spikelets* ovate or oblong-ovate. *Outer glumella* with 3—5 parallel nerves, herbaceous below, scarious at the end, compressed, keeled, pointless. *Upper glume* 3-ribbed. *Poa*.

† *Rhizome* creeping or with long scions.

9. *P. compréssa* L. (*flat-stemmed M.*); creeping, panicle subspreading (afterwards subcoarctate), spikelets oblong of 5—7 obtuse florets, upper sheath as long as or shorter than its leaf, culm compressed, ligule short obtuse.—*α.* florets usually connected by a web, outer glumella with 3 silky nerves and sometimes 2 glabrous intermediate ones. *E. B. t.* 365: *Parn. Gr. t.* 37. *P. subcompressa Parn. Gr. t.* 90.—*β.* florets not connected by a web, outer glumella 5-nerved. *P. polynoda Parn. Gr. tt.* 39, 91, 92.

On walls, and in dry barren ground, frequent. *γ.* 6, 7.—One foot or more high, rather glaucous. *Culms* compressed, procumbent at the base: in *α.* the uppermost node is about the middle of the stem; in *β.* there are 7 or 8 nodes, of which the second is usually about the middle of the stem, the uppermost a little above it. *Leaves* short, linear, acute, upper one as long as or longer than its sheath. *Panicle* not much branched. *Florets* by no means always connected by a web. In *β.* the two lateral nerves and the midrib of the outer glumella are sometimes silky, sometimes only the former, sometimes all are naked.

10. *P. praténsis* L. (*smooth-stalked M.*); creeping, or with scions above ground, panicle diffuse, spikelets oblong-ovate of about 4 florets which are acute 5-nerved webbed, marginal nerves and keel of the outer glumella silky, culm and sheath smooth, upper sheath much longer than its leaf, ligule short. *Parn. Gr. tt.* 31, 32, 33, 34.—*α.* culm tall, leaves broad. *E. B. t.* 1073.—*β.* leaves narrow. *P. angustifolia* L.—*γ.* *subcærulea*; smaller and glaucous. *P. subcærulea Sm.: E. B. t.* 1004

Meadows and pastures, frequent.—*β.* in shady places.—*γ.* on walls or dry places, especially in alpine countries. *γ.* 6, 7.—*Sheaths* in some situations very slightly rough; when cultivated the two lateral nerves of the *glumella* become sometimes less silky, but never quite glabrous. Allied to the last in character, although unlike in general appearance, and more resembling *P. trivialis*, which differs by both the ligule and the root, as well as by the marginal nerves of the outer glumella being always glabrous.—*β.* and *γ.* appear to be starved states.

†† *Root fibrous. Rhizome slightly creeping, without long scions. Keel of the outer glumella silky.*

‡ *Marginal nerves of the outer glumella glabrous.*

11. *P. trivialis* L. (*roughish M.*); panicle diffuse, spikelets oblong-ovate of about 3 florets, which are acute 5-nerved connected by a web, outer glumella silky only on the midrib, upper sheath much longer than its leaf, culms and sheaths roughish, ligule oblong acute, root tufted. *E. B. t. 1072: Parn. Gr. t. 35.*

Meadows and pastures, common. 4. 6, 7.—*Culm* 1—2 ft. high. *Leaves* linear, acute. *Panicle* much branched.

‡‡ *Marginal nerves of the outer glumella silky.*

|| *Root perennial.*

12. *P. bulbosa* L. (*bulbous M.*); stems swollen at the very base, panicle close subspicate, spikelets ovate 3—4-flowered, florets silky on the keel and marginal nerves connected by a web, leaves flat acute with a white narrow serrate cartilaginous margin, upper sheath much longer than its leaf, ligule prominent acute. *E. B. t. 1071: Parn. Gr. t. 89.*

East and south of England, principally on sandy sea-shores. 4. 4, 5. — A well-marked species, soon withering after flowering, and then its bulbs are blown about in large quantities on the surface of the sand.

13. *P. alpina* L. (*alpine M.*); tufted, panicle erect spreading when in flower, afterwards somewhat ovate, spikelet ovate of 3—5 acute free (not webbed) florets, outer glumella silky on the keel and marginal nerves and downy between them, upper sheath longer than its leaf, leaves broadly linear obtuse mucronate, uppermost cymbiform at the apex, ligule of the upper leaves oblong acute, of the lower ones short obtuse. *E. B. t. 1003: Parn. Gr. tt. 37, 94. P. cæsia Sm.?: E. B. t. 1719.?*

Extremely abundant on the lofty mountains of Scotland and Wales, and very generally viviparous. 4. 6, 7.—*Culms* 6—12 inches high, nearly erect. *Leaves* mostly short, flat, linear, obtuse, with a very small mucro: uppermost "folded, compressed, and rounded behind the summit:" *Parn. Spikelets* rather large, close. *Glumes* ovato-lanceolate, much compressed; dorsal rib scabrous, terminating in a very short point or awn, with two short lateral ribs or nerves at the base. *Outer glumellas* ovato-lanceolate, acute. This species is more allied to the last than is generally supposed; and indeed the points of distinction are scarcely greater than may arise from difference of situation.

14. *P. laxa* Hænke (*wavy M.*); tufted or slightly creeping, panicle contracted lax slightly drooping, spikelets ovate, of

3—4 acute florets, outer glumellas silky at the keel and marginal nerves glabrous between them, upper sheath longer than its leaf, upper ligule long and acute, leaves all flat narrow linear acuminate. *P. flexuosa* Sm.: *E. B. t.* 1123. — *α.* panicle somewhat erect, florets connected by a web, outer glumella with two intermediate glabrous nerves. *P. minor* Gaud. — *β.* panicle lax slightly drooping, florets without a web, outer glumella without intermediate nerves. *P. laxa* Parn. *Gr. t.* 38 (and most others).

Ben Nevis, Loch-na-gar, and Clova mountains. *γ.* 7, 8. — Very slender, scarcely able to support the weight of its own panicle, slightly glaucous. Leaves more numerous than in *P. alpina*, and much narrower. Florets very obscurely ribbed, all very acute, green and purple, with diaphanous margins, sometimes connected by a web, sometimes free, often viviparous. Glumes nearly equal. Both varieties have been found in each of the above localities.

15. *P. nemoralis* L. (*Wood M.*); tufted or slightly creeping, panicle slender, spikelets ovate or lanceolate of 2—5 florets, florets silky at the keel and marginal nerves, uppermost sheath usually as short as its leaf, ligule obtuse or truncate. — *α.* upper sheath as short as the leaf, ligule extremely short truncate, florets slightly webbed. *E. B. t.* 1265: *Parn. Gr. t.* 36. — *β.* uppermost sheath usually longer than its leaf, ligule extremely short truncate, florets free. *P. glauca* Sm. (partly). *P. Parnellii* Bab.: *E. B. S. t.* 2916: *Parn. Gr. t.* 93. — *γ.* uppermost sheath as short as the leaf, its joint about the middle of the culm, ligule prominent obtuse, spikelets greenish, florets free. *P. montana* Parn. *Gr. t.* 39. — *δ.* uppermost sheath as short as its leaf, its joint near the base of the culm, ligule prominent obtuse, spikelets purplish, florets free. *P. glauca* Sm. in *E. B. t.* 1720? — *ε.* uppermost sheath as short as its leaf, ligule prominent obtuse, florets webbed. *P. Balfourii* Parn. *Gr. t.* 66: *E. B. S. t.* 2918.

Common in woods and thickets. — *β.* Upper Teesdale. — *γ.* Ben Lawers. — *δ.* and *ε.* Mountain-tops in Upper Teesdale, Wales, and Scotland. *γ.* 6, 7. — A very variable species, to which we have no hesitation in referring all the above as varieties: and, indeed, although we have arranged them as such, in order that our readers may see the differential characters assigned to them, we remain of the opinion stated in former editions, that there is no valid reason for distinguishing any of the mountain forms. As to *P. casia* of Smith, referred by Smith himself to his *P. glauca*, there is some doubt, the figure in *E. B. t.* 1719 being rather ambiguous; Mr. Borrer informs us that he has never seen it except in gardens, and perhaps it is merely the fertile form of *P. alpina*, the root, which, according to Smith, is tufted, agreeing with that species; what is usually so called is referable chiefly to our var. *δ.*, and sometimes to *ε.*; Mr. Mackay's speci-

mens, however, from Ben Lawers, referred to by Smith, belong to var. β . We do not know what species Dr. Parnell (*Gr.* t. 40) and Mr. Babington intend by their *P. casia*, which they describe with a perfectly fibrous root, but otherwise having all the characters of our δ .; to it Mr. Babington refers *E. B.* t. 1719. Mr. Babington attributes very short ligules to our γ . as well as to α . and β ., characterizing *P. Balfourii* alone by the prominent obtuse ligule; but our authentic specimens of *P. montana* also had long ligules. Our δ . and ϵ . having broader spikelets than in β . or γ ., of 3—5 florets, and usually of a purplish colour, are only to be distinguished from each other by the web of the florets; and this is sometimes almost inconspicuous in Dr. Balfour's own specimens, and disappears by cultivation.

||| *Root annual.*

16. *P. annua* L. (*annual M.*); panicle subsecund divaricate somewhat triangular, spikelets oblong-ovate of about 5 slightly remote 5-ribbed webless florets, the midrib and all the nerves more or less silky, upper sheath longer than its leaf, ligule oblong acute, culm ascending compressed, root fibrous. *E. B.* t. 1141: *Parn. Gr.* tt. 40, 41.

Meadows and pastures, and by road-sides, everywhere. ☉. 4—9. — *Culms* 6—10 inches long, below prostrate and throwing out roots. *Leaves* distichous, linear, rather blunt, flaccid, often waved, bright green. *Glumes* very unequal, ovato-lanceolate, rough at the back, 3-nerved. *Outer glumella* ovato-lanceolate, acute, white and diaphanous at the margin.

27. *TRIÓDIA* Brown. Heath-grass. (Table VII. f. 24.)

Panicle a nearly simple raceme. *Spikelets* compressed with 2—4 fertile florets. *Glumes* 2, about equal, 3-ribbed, as long as the florets. *Glumellas* 2; outer somewhat coriaceous, convex on the back, hairy at the base, 3-toothed at the summit; teeth nearly of the same length, middle one straight (sometimes bristle-shaped). — Named from τρεῖς, *three*, and ὀδὺς, a tooth.

1. *T. decumbens* Beauv. (*decumbent H.*); spikelets few racemose, pedicels long erect, ligule a tuft of hairs. *Parn. Gr.* t. 30. *Poa With.*: *E. B.* t. 792. *Festuca* L. *Danthonia* DC.

Abundant in dry mountain-pastures, heaths, and moors. 4. 7. — *Culm* 1 foot long, procumbent at the base: flowering culms only erect. *Leaves* linear, acuminate, hairy as well as the sheaths. *Glumes* nearly equal, as long as the whole spikelet, lanceolate, acute, 3-nerved with broad thin margins, scabrous on the keels. *Outer glumella* ovate, 5-nerved or ribbed for its whole length, having a small tuft of hairs on each side at the base; apex with three teeth. *Inner glumella* obtuse, entire at the point, ciliate at the ribs and there folded.

28. BRÍZA Linn. Quaking-grass. (Tab. VII. f. 25.)

Panicle lax. *Spikelets* much compressed, ovate or deltoid, with 3—8 closely imbricate florets. *Glumes* 2, nearly equal, broad, much shorter than the spikelet. *Glumellas* 2, awnless: outer cymbiform, obtuse, at length cartilaginous and convex on the back below, with a scarious margin; inner small and flat. *Caryopsis* included within the *glumellas*.—Name: βριζα, some kind of corn; probably from βριθω, to droop or bend down, in allusion to the spikelets, which are most delicately suspended.

1. *B. média* L. (common Q.); spikelets broadly ovate of about 7 florets, glumes shorter than the lowermost florets, ligule truncate or obtuse usually very short. *E. B.* t. 340: *Parn. Gr.* t. 30.

Meadows and pastures, frequent. 4. 6.—Whole plant very elegant. *Culms* slender, 1 ft. or more high. *Leaves* short, linear-acuminate. *Branches* of the *panicle* filiform, divaricating, purple. *Spikelets* very smooth, shining, purple, more or less green or greenish-white at the edges. *Glumes* very concave, subcompressed. Outer *glumella* resembling the *glumes*, slightly gibbous at the back, but less so than in the next species.

2. *B. minor* L. (small Q.); spikelets triangular about 7-flowered, glumes longer than the florets, ligule elongate lanceolate acute. *E. B.* t. 1316: *Parn. Gr.* t. 101.

Fields in the extreme south of England, very rare. About Bath and in Cornwall. Guernsey and Jersey. ☉. 7.—Whole plant much smaller than the last.

29. DÁCTYLIS Linn. Cock's-foot-grass. (Tab. VII. f. 26.)

Panicle with the secondary branches short and very dense, subscund. *Spikelets* with 3 or more florets, compressed, without a bractea at the base. *Glumes* 2, unequal, shorter than the spikelet; lower one keeled. *Glumellas* 2; outer one keeled, and ciliate at the back, 5-nerved, lanceolate, with a short bristle close to the point, inclosing the *caryopsis*.—Except in habit, this genus is scarcely distinguishable from *Poa*, *Koeleria*, and *Festuca*.—Name: δακτυλος, a finger; from a fancied resemblance in the division of the panicle.

1. *D. glomerata* L. (rough C.); branches of the panicle with ovate clusters of spikelets, leaves linear flat the margins scabrous, stem erect, root tufted. *E. B.* t. 335: *Parn. Gr.* t. 29.

Way-sides, meadows, and woods; abundant. 4. 6, 7.—*Culm*

1—2 feet high. * *Leaves* rather broadly linear, acuminate, scabrous. *Panicles* secund. *Spikelets* of 3—4 florets, thickly clustered on the branches, clusters ovate: branches sometimes long distant and spreading, sometimes short and approximate, when the whole panicle resembles a single cluster. *Glumes* membranous, smaller than the lowermost *floret*, lanceolate, acuminate, unequal, glabrous, scabrous at the back, more or less obliquely keeled. Outer *glumella* subcartilaginous, lanceolate, much compressed, scabrous, 5-ribbed, ciliate at the keel, with a short awn close to the point.

30. *CYNOSÚRUS* Linn. Dog's-tail-grass. (Table VIII. f. 27.)

Panicle spike-like, unilateral. *Spikelets* with 2—5 perfect *florets*, distichous, with a pectinate bractea or involucre (an abortive spikelet) at its base. *Glumes* 2, equal, membranous, much shorter than the spikelet, 1-nerved, keeled, shortly awned. *Glumellas* 2, membranous, linear-lanceolate; outer awned below the extremity or mucronate, faintly 5-nerved. — Named from *κυνωρ*, a dog, and *οψα*, a tail; from the shape of its spike.

1. *C. cristátus* L. (*crested D.*); raceme linear spike-like, florets with a very short awn. *E. B.* t. 316: *Parn. Gr.* t. 28.

Dry pastures, frequent. 4. 7. — *Culm* 1—1½ foot high, slender. *Leaves* narrow, linear, acuminate. *Raceme* secund. *Involucres* beautifully pectinate, one at the base of each spikelet, their divisions linear, acute, greenish, subglumaceous, a little curved, rough. *Spikelets* 3—5-flowered. *Glumes* lanceolate, nearly equal, membranous, rough at the keel, as long as the floret. Outer *glumella* lanceolate, obscurely nerved, green, scabrous, especially at the keel, terminating in a short rough awn; inner one white, bifid, pubescent at the angles of the fold. — A valuable agricultural grass.

2. *C. echinátus* L. (*tough D.*); raceme in an ovate spike, florets with awns as long as the glumellas. *E. B.* t. 1333: *Parn. Gr.* tt. 28, 129.

Sandy sea-shores. Guernsey and Jersey. Occasionally, when introduced, in the extreme south of England. ☉. 7.

31. *FESTÚCA* Linn. Fescue-grass. (Tab. VIII. f. 28.)

Panicle lax or coarctate. *Spikelets* many-flowered, more or less laterally compressed, without a bractea at the base. *Glumes* 2, unequal, membranous, usually keeled, much shorter than the spikelet. *Glumellas* 2, lanceolate; outer convex on the back, acuminate or awned at or close to the summit, the lateral nerves slightly converging and disappearing below the summit; inner minutely ciliate at the ribs. *Styles* short, terminal. *Caryopsis* glabrous free. — Name from *fest*, Celtic, *food* or *pasturage*.

* *Root-leaves very narrow, not broader than those of the culm. Awn of the floret terminal.*

† *Florets usually monandrous, shorter than their awns. Glumes very unequal. Vulpia.*

1. *F. uniglumis* Soland. (*single-glumed F.*); panicle a simple erect two-ranked subsecund raceme, lower glume very minute, florets compressed keeled not ciliate. *E. B. t. 1430: Parn. Gr. t. 112.*

On the sandy sea-coast. South-east and south of England; Wales. Ireland. ☉. 6.—A plant remarkable for the minuteness and apparent suppression of one of its *glumes*, by which the species is at once known. Stamens often 2 or 3.

2. *F. bromoides* L. (*barren F.*); panicle secund, glumes very unequal the upper one as long as the lowermost contiguous floret, florets terete not ciliate scabrous towards the summit. — *a.* flowering panicle erecto-patent, lower branches slender, culm above leafless. *E. B. t. 1411: Parn. Gr. tt. 54, 55.* *F. sciuroides* Roth. — *β.* panicle drooping at the end, lower branches very short, culm sheathed and leafy to near the panicle. *F. Myurus* Sm. (not *L.*): *E. B. t. 1412.* *F. pseudomyrus* Koch: *Parn. Gr. t. 111.*

Dry pastures and on walls, less frequent in Scotland, but not rare about Edinburgh. — *β.* frequent in England; rare in Scotland, as at Forfar. ☉. 6.—*Culms* 6—12 inches high. *Leaves* linear, setaceous, complicate. *Glumes* very unequal, lanceolate, acuminate, rough at the keel; lower one sometimes minute, occasionally half as long as the upper, usually about a third of its length, 1-nerved; upper 3-nerved, and scarcely ever shorter than the lowest floret (exclusive of its awn) on the same side. Lower *glumella* scabrous towards the point. *Awn* often twice as long as its floret. *Stamens* 1, 2, or 3. In *F. Myurus* L. (*Parn. Gr. t. 55.*) the upper glume is only half as long as the lowermost contiguous floret, and the florets are tubercular-scabrous on the back above the middle; whether a species or only a variety it has not occurred in this country.

†† *Florets triandrous longer than their awns.*

3. *F. ovina* L. (*Sheep's F.*); panicle subsecund subcoarctate, spikelets oblong of about 4—7 florets with short awns, leaves flat or involute-setaceous, ligule 2-lobed. — *a.* tufted, culms short somewhat 4-angled and scabrous-pubescent below the small panicle, leaves involute-setaceous. *E. B. t. 585: Parn. Gr. tt. 56, 57.* *F. vivipara* Sm.: *E. B. t. 1355.* *F. cæsia* Sm.: *E. B. t. 1917.* *F. tenuifolia* Sibth. — *β.* tufted or slightly creeping, culms taller many-angled and somewhat glabrous below the broader panicle, leaves of the culm often flat but afterwards usually involute. *F. duriuscula* L.: *E. B.*

t. 470: *Parn. Gr.* tt. 58, 59, 60. — γ . extensively creeping, culms usually tall many-angled and glabrous below the often broadish panicle, leaves of the culm flat at length sometimes involute. *F. rubra* L.: *E. B.* t. 2056. *F. duriuscula* var. *Parn. Gr.* t. 59, 60.

α . Abundant in dry and elevated pastures. — β . Pastures and waste ground. — γ . Light sandy or rarely in wet places. 4. 6, 7. — Whole plant more or less glaucous, and having a purple tint in the spikelets. *Root* of α . much tufted and with scarcely any creeping rhizomes or suckers, with numerous, mostly short, often curved leaves, which afford excellent food for sheep in hilly situations; β . is less tufted and shows a greater tendency to creep; in γ ., at least when growing in sand, there is an extensively creeping rhizome; in β . and γ . there is frequently also a lateral shoot or sucker from the rhizome ending in erect shoots with distichous leaves. *Panicle* of α . usually small and narrow, often scarcely $1\frac{1}{2}$ inch long; in β . and γ . it varies from $1\frac{1}{2}$ to 4 inches long. *Glumes* nearly glabrous, scarcely half the length of the lowermost floret on the same side. *Florets* in all the varieties sometimes nearly glabrous, sometimes pubescent upwards or even hairy all over, terminating in an awn which very rarely exceeds half the length of the *glumella* and is often considerably shorter and sometimes obsolete. The two first varieties are frequently viviparous in mountainous situations. After a careful reconsideration of these plants, we recur to the opinion, given nearly 40 years ago in the *Flora Scotica*, that *F. rubra* is not distinct from *F. duriuscula*; this is confirmed by the remarks made by Mr. Woods in *Phytol.* iii. p. 261.

** *Root-leaves* flat, broader than those of the culm. *Bristle* or *awn* (when present) arising from below the summit of the outer *glumella*. *Schedonorus Beauv.*

† *Ligule* of the uppermost sheath prominent, obtuse. *Outer glumella* 3-nerved.

4. *F. sylvatica* Vill. (*Reed F.*); panicle subsecund much branched spreading nearly erect, spikelets of 2—5 acute awnless scabrous 3-nerved florets, outer leaves linear-lanceolate. — α . leaves broad, florets 3—5. *Poa Pollich*: *Parn. Gr.* tt. 44, 100. *F. Calamaria* Sm.: *E. B.* t. 1005. — β . *minor*; leaves narrower, florets about 2. *F. decidua* Sm.: *E. B.* t. 2266.

Mountain woods, not uncommon. 4. 7. — *Culms* 2—3 feet high. with broad leaves. *Glumes* narrow, linear-lanceolate, very unequal, smaller one single-nerved, larger one thickened at the margin and as if 3-nerved. *Florets* rather distant on the rachis. *Outer glumellas* lanceolate-acuminate, scabrous, often also denticulate on the midrib throughout.

†† *Ligule of the uppermost sheath very short, scarcely perceptible. Outer glumella 5-nerved. Bucetum Parn.*

5. *F. pratensis* Huds. (*meadow F.*); panicle close never divaricate, branches in pairs one bearing a single spikelet, the other one or several spikelets sometimes wanting, spikelets 5—10-flowered, outer glumella 5-ribbed with a very short or obsolete awn, leaves linear-lanceolate. — *α.* some or all of the branches of the panicle in pairs, one usually with several spikelets. *E. B. t.* 1592: *Bucetum Parn. Gr. t.* 46. — *β. loliacea*; branches of the panicle solitary reduced to a single spikelet which is sessile or shortly stalked below. (—1. larger glume with many (7—9) prominent ribs. *F. loliacea* Huds.: *E. B. t.* 1821. *Bucetum Parn. Gr. t.* 113. — 2. larger glume with 3—5 nerves. *Bucetum Parn. tt.* 45, 114.)

Moist meadows and pastures, banks of rivers, &c., common. — *β.* more rare. 4. 6, 7. — Mr. Bentham unites this species to the next.

6. *F. elatior* L. (*Tall F.*); panicle diffuse patent much branched, branches divaricate during or after flowering mostly in pairs each with 2 or more (usually numerous) spikelets, spikelets 5—6-flowered, outer glumella 5-ribbed with a very short or obsolete nearly terminal awn, leaves linear-lanceolate. *E. B. t.* 1593. *Bucetum Parn. Gr. tt.* 46, 47. *F. arundinacea* Schreb.

Moist pastures and banks of rivers, not unfrequent. 4. 6, 7. — There appears to be two forms of this species: one, *F. elatior*, with branches of the panicle short, divaricate in flower, but afterwards ascending (*Parn. Gr. t.* 47); the other, *F. arundinacea*, with branches of the panicle longer, divaricate after flowering (*Parn. Gr. t.* 46): but these points of difference seem to be caused by the greater or less luxuriance of the plant.

7. *F. gigantæa* Vill. (*tall-bearded F.*); panicle branched drooping towards one side, spikelets lanceolate 3—6-flowered awned, outer glumella 5-nerved usually shorter than its infra-terminal awn, leaves linear-lanceolate ribbed. — *α.* panicle larger and more drooping, spikelets about 5-flowered. *E. B. t.* 1820. *Bromus L. Bucetum Parn. Gr. t.* 47. — *β.* panicle smaller and more erect, spikelets fewer about 3-flowered, leaves narrower. *F. triflora* Sm.: *E. B. t.* 1918.

Shady woods and moist hedges. 4. 7, 8. — A tall grass 3—4 feet high, with broad leaves, having the habit and some of the characters of *Bromus*. *Ligule* of the uppermost sheath very short. *Panicle* large. *Glumes* very unequal, larger ones with 3 ribs. *Outer glumella* lanceolate, obscurely ribbed, nearly glabrous, membranous at the edge upwards; the dorsal rib nearly smooth, not extending to the apex, but terminating in a distinct awn, which is thus inserted a little below the bifid point, and is sometimes twice as long

as the glumella, but occasionally only half its length. The inner glumella, which is scabrous or very minutely ciliate on the nerves, and the terminal styles show that this belongs to *Festuca*.

32. *BRÓMUS* Linn. Brome-grass. (Tab. VIII. f. 29.)

Panicle lax or coarctate. *Spikelets* many-flowered, more or less laterally compressed. *Glumes* 2, unequal, usually keeled, equal to or shorter than the lowermost florets. *Glumellas* 2: outer one herbaceous, convex on the back, two of the lateral nerves usually uniting with the middle one and forming an awn below the bifid extremity; inner one conspicuously ciliate on the ribs. *Styles* short, from below the summit of the *caryopsis*, which is villous at the apex and "adheres to the upper *glumellas*."—Name: from βρομος, a kind of *oat* so called by the Greeks, and that again from βρωμη, *food*.

* *Lower glume with one, upper with 3—5 nerves. Florets lanceolate.*

1. *B. erectus* Huds. (*upright B.*); panicle simple erect, spikelets linear-lanceolate, florets subcylindrical remote about twice as long as the straight awn diverging in flower afterwards erect, outer glumella obscurely 7-nerved, that of the lowermost floret one third longer than the smaller glume, sheaths somewhat hairy the hairs pointing upwards, radical leaves very narrow ciliate.—*α*. spikelets glabrous. *E. B. t.* 471: *Parn. Gr. t.* 51.—*β*. culms and spikelets hairy.

In fields and by road-sides, especially in a sandy soil over chalk. South and east of England. Wales. Near Dumfries; King's Park, Edinburgh; Fife; Scotland. *γ*. 6, 7.—*Culms* 2—3 feet high. This is truly perennial, which does not appear to be the case with any other *Bromus* unless perhaps the next. Its habit is that of *Brachypodium sylvaticum*. The *root-leaves* are narrow: *upper leaf* much broader. *Spikelets* erect. *Awn* shorter than the larger glume.

2. *B. áper* L. (*hairy Wood B.*); panicle slightly branched drooping, spikelets linear-lanceolate, florets remote subcylindrical downy or shortly hairy about twice as long as the straight awn diverging in flower afterwards erect, outer glumella 5—7-ribbed, that of the lowermost floret twice as long as the smaller glume, sheaths hirsute with hairs pointing downwards, leaves uniform the lower ones hairy. *E. B. t.* 1172: *Parn. Gr. t.* 51.

Moist woods and hedges. ♂ or ♂ (*Sm.*) or ♀ (*Schrad.*). 6, 7.—*Culm* 4—6 feet high; *leaves* broad. *Awn* shorter than the larger glume.

3. *B. stérilis* L. (*barren B.*); panicle drooping slightly branched, spikelets linear-lanceolate, florets remote subcylindrical scabrous shorter than the straight awn diverging during

and after flowering, outer glumella with 7 distinct equidistant ribs, leaves and sheaths pubescent. *E. B. t.* 1030: *Parn. Gr. t.* 50.

Waste ground, fields and hedges; common. ☉. 6.—*Culm* 2 feet high. Remarkable for its long, narrow, much-awned, and drooping spikelets.

4. *B. Madritensis* L. (*upright annual B.*); panicle erect slightly branched, spikelets linear-lanceolate, florets remote subcylindrical subscabrous about as long as the straight awn diverging during and after flowering, outer glumella 7-ribbed scarcely longer than the inner one, rib on each side of the dorsal one obscure the two marginal ones approximate, lower sheaths with hairs pointing downwards. — *α.* stem glabrous, rachis and pedicels scabrous. *B. diandrus Curt.*: *E. B. t.* 1006: *Parn. Gr. t.* 50. — *β.* panicle compact, upper part of the stem rachis glumes and very short pedicels pubescent. *B. rigidus Roth.*

Rare, on sandy barren wastes, principally in the south of England. About Edinburgh and coast of Fife, Scotland (occasionally). ☉. 6, 7.—One foot high. *Stamens* usually 2 but sometimes 3; hence we have reverted to the name originally given to this species. Allied to *B. sterilis*; but the panicle is smaller, erect, or erecto-patent, often purplish. From this, *B. tectorum* (introduced at Hoddesdon, Hertfordshire) is principally distinguished by the unilateral drooping panicle, and the outer glumella much longer than the inner one.

5. *B. máximus* Desf. (*great B.*); panicle erect lax ultimately drooping slightly branched, spikelets lanceolate downy long-stalked after flowering, florets remote subcylindrical downy about half the length of the straight awns diverging during and after flowering distinctly 7-ribbed, outer glumella of the lowest floret equal to the larger glume, leaves downy on both sides. *E. B. S. t.* 2820: *Parn. Gr. t.* 115.

On the sands of St. Aubin's Bay, the Grève d'Azette and the Quenvais, Jersey. ☉. 6, 7.—*Stamens* often only 2. Distinguished by its long awns, the larger glume being as long as the adjacent glumella, the conspicuous equidistant 7 nerves to the glumella, and "by a sharp conical point at the base of the florets:" *Parnell.*

** *Lower glume with 3—5, upper with 7—9 nerves. Florets oblong, turgid, erect. Serrafalcus Parl.*¹

† *Outer glumella 7-nerved.*

6. **B. secúlinus* L. (*smooth Rye B.*); "panicle loose drooping in fruit, lower peduncles slightly branched, simple pedun-

¹ Mr. Bentham considers that all the members of this group (with, perhaps, the exception of *B. squarrosus*) form only one natural species, *B. arvensis*. There are certainly too many artificial ones. Dr. Schultz proposes to unite our 6, 7, 8, while he distinguishes *B. mollis* by the sheaths and leaves being furrowed with elevated nerves.

cles about equalling the oblong compressed spikelets, florets at first imbricated afterwards distinct cylindrical, the incurved edges of the outer glumella not overlapping those of the floret above them, awn straight about as long as the floret, leaves hairy but the sheaths nearly glabrous." *Watson in Hook. Lond. Journ. of Bot.* i. p. 85. *Serrafalcus Bab.* — α . spikelets shining scabrous but not downy. *E. B.* t. 1171 (*good, but panicle too long*): *Parn. Gr.* tt. 49, 121, 122. — β . spikelets downy. *Parn. Gr.* t. 123. *B. velutinus Sm.* *B. multiflorus Sm.*: *E. B.* t. 1884.

Corn-fields, not rare, but scarcely indigenous. ☉ or ♂. 6, 7. — *Culm* 2—3 feet high. Known in fruit by its hairy panicle, and separately rolled up flowers. Distinguished also from its allies by "the apex of the larger glume being situated half-way between the base of the glume and the summit of the second floret on the same side;" and by having the outer glumella "rounded on the upper margin, with the breadth (when flattened) considerably greater than half its length:" *Parnell*.

7. *B. commutatus* Schrad. (*tumid Field B.*); "panicle loose slightly drooping in fruit, lower peduncles often elongate and branched, simple peduncles equalling or exceeding in length the oblong-lanceolate spikelets, florets loosely imbricate," outer glumella longer than the bluntish inner one, "when in fruit only slightly overlapping at the edges near the base, awn straight about as long as the floret, leaves and their sheaths hairy." *Watson: Parn. Gr.* tt. 124, 125. *Serrafalcus Bab.* *B. arvensis Parn. Gr.* t. 49. *B. pratensis Sm.*: *E. B.* t. 920? (*small specimen*).

Road-sides and corn-fields, frequent. ☉ or ♂. 6, 7. — Known by its grayish-green usually glossy glabrous (sometimes downy) spikelets acquiring a brownish tinge in sunny spots, its peduncles longer and harsher than those of *B. mollis* and *racemosus*, and its glumellas larger and more inflated than in *B. secalinus* and *arvensis*: *Watson*. Apex of the larger glume half-way (or a little more) between its base and the summit of the second floret on the same side. Inner glumella only reaching to the base of the awn, which is rather shorter than its floret; outer glumella when flattened, twice as long as broad. Mr. Baker finds in Yorkshire a meadow form, which has the spikelets quite separate, in fruit, as in *B. secalinus*.

8. *B. racemosus* L. (*smooth B.*); "panicle elongate erect in fruit, peduncles nearly simple about equal to" or shorter than "the ovate subcompressed glabrous spikelets, florets imbricate compressed," midrib of glumes and glumellas scabrous towards the apex, "awn straight about as long as the glume, sheaths of the leaves slightly hairy." *Watson: E. B.* t. 1079: *Parn. Gr.* tt. 48, 119. *Serrafalcus Parl.*

Meadows and pastures. ☉ or ♂. 6. — In dry sandy ground

all the peduncles are very short and nearly quite simple, but in moister situations many of them are as long as the spikelets. To us this species appears scarcely different from the last, except in being more glabrous: as in it, the summit of the larger *glume* is midway between its base and the summit of the third *floret* on the same side. Dr. Parnell remarks that when the outer *glumella* is opened out, its upper margins form an angle at the point, giving it a lanceolate or acuminate form, instead of being very obtuse as in *B. mollis*.

9. *B. mollis* L. (*soft B.*); "panicle close ovate erect in fruit, slightly branched, simple peduncles shorter than the crowded" or quite simple "ovate somewhat compressed pubescent spikelets, flowers closely imbricate," midrib of glumes and glumellas downy, "awn straight about as long as the florets, sheaths of the leaves pubescent or hairy." *Watson: E. B. t. 1078 (good): Parn. Gr. tt. 48, 116, 117, 118. Serrafalcus Parl.*

Meadows, pastures, banks, road-sides, fields, &c. everywhere. ☉ or ♂. 6.— In sandy ground in Devon and Cornwall, a form occurs with the leaves and spikelets densely pubescent, and all the peduncles quite simple and very short. *Culm* 1—2 ft. high. *Panicle* 2—3 inches long. *Spikelets* nearly erect. *Florets* 5—10. Outer *glumellas* convex, but by no means forming such cylindrical florets as in the last two species. Apex of the larger *glume* half-way between its base and the summit of the third floret on the same side, sometimes a little longer, as in Dr. Parnell's *var. ovalis*, tab. 117 (where the spikelets are shorter than usual), and sometimes reaching almost half-way to the summit of the fourth floret on the same side (*var. pratensis*, tab. 118). The *glumes* and outer *glumellas* are downy, but are not toothed on the midrib: in the last species they are scabrous although otherwise glabrous, but the midrib is toothed towards the summit. *Parnell.*

[10. *B. *arvensis* L. (*taper Field B.*); "panicle spreading loose slightly drooping in fruit, lower peduncles much elongate simple or branched, simple peduncles longer than the linear-lanceolate compressed spikelets, florets imbricate in fruit," inner *glumella* acute and as long as the outer one which is "shorter than the awn and with 2 prominent ribs on each side near the margin." *Watson: E. B. t. 1984 (glumes too narrow): Parn. Gr. t. 126. Serrafalcus Godr.*

Southampton Bay; coast of Durham; near Hebden Bridge, Yorkshire; Box-Mill. Fife. ☉. 7, 8.— Certainly introduced, and not even naturalized. "This has longer peduncles than the 3 preceding species, and the smallest *glumellas*, the latter resembling those of *B. commutatus* in acquiring the purple tinge, but differing in the prominent ribs or nerves on each side:" *Watson*. Distinguished from *B. commutatus* by the inner *glumella* being acute and as long as the outer one, which has 2 prominent ribs near each margin. Apex of the larger *glume* reaching half-way from its base to the summit of the second *floret* on the same side. *Awns* rather longer than the *glumellas*, straight, slightly spreading when dry. *Anther* four times as long as broad.]

†† *Outer glumella usually 9-nerved.*

[11. *B. *pátulus* Koch (*spreading B.*); panicle spreading loose drooping in fruit, lower peduncles much elongate simple or branched, simple peduncles scarcely longer than the linear-lanceolate compressed spikelets, florets imbricate in fruit, outer glumella longer than the inner one rather shorter than the nearly straight awn with usually 9 (sometimes 7) ribs the two lateral ones on each side prominent. *Parn. Gr. t.* 127. *Serrafalcus Parl.*

Near Hebden Bridge, Yorkshire: *Mr. Gibson*. ☉. 6.—Introduced and not even naturalized. Inner *glumella* only reaching to the base of the awn. *Awns* slightly spreading when dry. Apex of the larger glume reaching midway from its base to the summit of the second *floret* on the same side. *Anthers* twice as long as broad. This seems too closely allied to the last.]

[12. *B. *squarrósus* L. (*Corn B.*); panicle drooping, peduncles simple lower ones about as long as the oblong or ovato-lanceolate subcompressed spikelets, florets imbricate in fruit nearly glabrous, glumellas about as long as the ultimately divaricating awns with 3 prominent ribs on each side, leaves pubescent. *E. B. t.* 1885: *Parn. Gr. t.* 128. *Serrafalcus Parl.*

Corn-fields; Somerset, Essex, Kent, and Surrey. ☉. 6, 7.—This species is remarkable for its spreading awns: it is however certainly an introduced plant. Inner *glumella* shorter than the outer, and reaching only to the base of the awn. Apex of the larger *glume* reaching half-way from its base to the summit of the second *floret* on the same side. *Anthers* twice as long as broad.]

33. *AVÉNA* Linn. Oat. Oat-grass. (Tab. VIII. f. 30.)

Panicle lax. *Spikelets* laterally compressed, with 2 or more perfect florets and sometimes 1 or more rudimentary neuter ones. *Glumes* 2, membranous, upper one 3- or many-nerved. *Glumellas* 2, lanceolate, hairy at the base, herbaceous, ultimately cartilaginous and firmly inclosing the *caryopsis*; outer one with a long twisted geniculate dorsal awn, with two points or bristles at the summit.—Name of doubtful origin, which we cannot trace to any language older than the Latin; perhaps, therefore, from *fœnum*, *hay*.

* *Smaller glume* 5—7-nerved, *larger one* 5—11-nerved. *Outer glumella* 6—8-nerved. *Spikelets* ultimately drooping. *Ovary* hairy at the apex. *Caryopsis* with a longitudinal furrow on one side. *Annual plants.*

1. *A. fátua* L. (*wild O., or Haver*); panicle erect, spikelets drooping of about 3 scabrous long-awned florets smaller than the glumes with long fulvous hairs at the base, outer glumella bifid at the summit. *E. B. t.* 2221: *Parn. Gr. t.* 27.

Corn-fields, frequent. ☉. 6—8. — *Culm* 2—3 feet high. *Leaves* linear-lanceolate. *Ligule* obtuse, or emarginate. *Glumes* large, membranous, ovato-lanceolate, shining at the margins, keeled, acuminate, many-ribbed. *Outer glumella* with long fulvous hairs at its base, bifid at the point. *Awn* of each floret long and twisted, very hygrometrical. — The cultivated oat, *A. sativa*, differs from it in having one or more upper florets imperfect and awnless, in the shorter awn and absence of fulvous hairs at the base of the florets. Mr. Bentham unites it, and also the following, to *A. fatua*.

2. *A. strigósa* Schreb. (*Bristle-pointed O.*); panicle erect, branches all secund, spikelets of 2 perfect florets each awned as long as the glumes and terminated by 2 long straight bristles. *E. B.* t. 1266: *Parn. Gr.* t. 26.

Corn-fields; common both in England and Scotland. ☉. 6, 7. — *Ligule* oblong, often incise. Very much like *A. sativa*, but readily distinguished from it, as well as from *A. fatua*, whether as a variety or a species, by the florets ending in two long bristles.

** *Smaller glume* 1—3-nerved, larger one 3-nerved. *Outer glumella* distinctly 5-ribbed. *Spikelets* erect. *Ovary* hairy at the apex. *Caryopsis* furrowed along one side. *Ligule* acute. *Perennial* plants.

3. *A. praténsis* L. (*narrow-leaved perennial O.*); panicle erect simple or slightly compound lax, spikelets erect oblong compressed of 3—6 florets, lower floret scarcely as long as the larger glume, leaves glabrous but more or less scabrous on the surface. — *α. vulgaris*; lower leaves involute, sheaths cylindrical nearly smooth, spikelets 3—5-flowered. *E. B.* t. 1204. *Trisetum Parn. Gr.* t. 52. — *β. longifolia*; lower leaves long flat and linear, sheaths much compressed slightly keeled roughish. *Trisetum Parn. Gr.* t. 52. — *γ. alpina*; lower leaves short flat, sheaths cylindrical or compressed roughish, spikelets 5—6-flowered. *Trisetum Parn. Gr.* t. 53. *A. alpina* Sm. *A. planiculmis* Sm.: *E. B.* t. 2141.

Dry pastures, heathy and mountainous places. — *β.* “moist shady woods near the sea, in the neighbourhood of Edinburgh.” — *γ.* Highland mountains. 4. 6, 7. — Tufted, or with a very shortly creeping *rhizome*. Lower peduncles mostly in pairs, one longer than the other, and both simple; sometimes the longer one bears 2 or rarely 3 distant spikelets, so that the whole panicle has a lax appearance, very different from what we find in the next; but as it is now ascertained that *A. pratensis* has occasionally the sheaths flattened, there is a possibility that *A. planiculmis* may be only another form of it. Mr. Bentham unites them as also *A. pubescens*.

4. *A. planiculmis* Schrad. (*flat-stemmed O.*); panicle erect compound interrupted, spikelets erect nearly cylindrical linear-oblong of 5—7 florets, lower floret longer than the longest

glume, leaves scabrous broadly linear suddenly acute minutely serrate, sheaths flat sharply carinate scabrous, lower part of the culm slightly compressed two-edged. *E. B. S.* t. 2684.

Glen Sannox, on the ascent of Goat-Fell from Loch Rannoch, Isle of Arran, Scotland: *Mr. Stuart Murray* (1826). 4. 7.—This has been cultivated ever since 1826 (from the roots brought by Mr. Murray, and who alone has found it) in the Glasgow Botanic Garden, where it preserves all its characters. *Panicle* with many, erect, rather rigid branches. *Spikelets* much longer and larger than in *A. alpina*, the larger glume scarcely reaching half-way to the summit: in *A. pratensis* and *A. alpina* Sm. the larger glume is about two thirds (or more) of the length of the whole spikelet.

5. *A. pubescens* L. (*downy O.*); panicle erect nearly simple, spikelets erect of about 2 or 3 florets scarcely longer than the glumes, lower leaves flat downy not scabrous at the edge, sheaths downy. *E. B.* t. 1640. *Trisetum Pers.*: *Parn. Gr.* t. 53.

Dry pasture, especially in chalky or limestone countries. 4. 6, 7.

*** *Smaller glume 1-nerved, larger 3-ribbed. Outer glumella keeled with faint lateral nerves, ending in two bristles. Spikelets erect. Ovary glabrous. Caryopsis not furrowed. Ligule short and obtuse. Perennial plants.*

6. *A. flavescens* L. (*yellow O.*); panicle much branched lax, spikelets of about 3 florets equal in length to the longer of the very unequal glumes, outer glumella with two terminal bristles, lower leaves and sheaths hairy. *E. B.* t. 952. *Trisetum Beauv.*: *Parn. Gr.* t. 54.

Dry meadows and pastures, frequent. 4. 7.—This has the smallest flowers of all our species, and may readily be distinguished by that circumstance as well as by the outer *glumella*, and the *glumes*. *Pedicels* of the *florets* downy with a small tuft of hairs at the apex. *Terminal floret* abortive, reduced to a stalked bristle, hairy at its base.

†† *Styles elongate.*

34. PHRAGMITES Trin. Reed. (Tab. VIII. f. 31.)

Panicle loose. *Spikelets* distichous, with 1—5 distant perfect florets and a barren one at the base, which are all enveloped in long silky hairs attached to the rachis of the spikelet. *Glumes* 2, membranous, unequal, shorter than the floret, the lower much smaller. *Glumellas* 2, membranous; outer ending in a long subulate awnless point.—Name: φραγμιτης, *materials for an enclosure*; these reeds being used for that purpose.

1. *P. communis* Trin. (*common R.*); panicle spreading, spikelets coloured usually 3—5-flowered longer than the glumes.

leaves lanceolate acuminato-cuspidate. Arundo Phragmites L.: E. B. t. 401.: Parn. Gr. t. 29.

Abundant in ditches, margins of lakes, rivers, &c. 4. 7, 8.— Culms 6 ft. or more high, usually erect, rarely prostrate and very long (20—40 feet): Bromfield. Panicle large, purplish-brown, ultimately drooping. Glumes very unequal: lower ovato-lanceolate, many-ribbed; upper twice as long, thin, membranous, obsolete ribbed. As the flowers advance, the tufts of hair increase, at length becoming very silky. A variety is found abroad with only one perfect floret.

b. *Spikelets spiked, either quite sessile or shortly stalked, and arranged in a simple or compound spike or spike-like raceme.* (Tab. IX. f. 42. e. f. g.) (Gen. 35—44.)

* *Spikelets inserted on different sides of the common axis or rachis. Styles short. Stigmas thick, plumose.* (Tab. IX. f. 42. e. f.) (Gen. 35—40.)

† *Rachis alternately grooved between the joints.*

35. ELYMUS Linn. Lyme-grass. (Tab. VIII. f. 32.)

Spikelets in pairs from the same joint of the *rachis*, each with 2—4 fertile florets. *Glumes* 2, collateral (both on one side of the spikelet), awnless. *Glumellas* 2, covering and usually incorporated with the *caryopsis*.—Name: *ελυμος*, given by the Greeks to the *Panic-grasses*, but why is not known.

1. E. *arenarius* L. (*upright Sea L.*); spike close erect, rachis flat not winged, florets as long as the lanceolate downy glumes. E. B. t. 1672: Parn. Gr. t. 64.

Sandy sea-shores, frequent. 4. 7.— *Rhizome* extensively creeping in the loose soil. *Culms* 3—4 ft. high, glabrous. *Leaves* glaucous, involute, pungent. *Spike* 4—6 in. long. *Spikelets* of about 3 flowers. *Glumes* 2, lanceolate, acuminate, downy. Outer *glumella* resembling them, but broader; inner bifid at the point.

2. E. *geniculatus* Curt. (*pendulous Sea L.*); spike lax bent downwards, rachis winged, glumes subulate glabrous longer than the florets. E. B. t. 1586: Parn. Gr. t. 131.

Near Gravesend, in a salt marsh: very rare. 4. 7.— Apparently quite distinct from the preceding; but requiring careful examination in the only locality recorded for it in this country: it is said to have been likewise found in Holland. We possess a diseased state of E. *arenarius*, very like it gathered in Scotland by Mr. M'Nab: Mr. Bentham indeed unites the two species.

36. HÓRDEUM Linn. Barley. (Tab. VIII. f. 33.)

Spikelets in threes from the same joint of the *rachis*, 1—2 usually neuter or barren: *fertile* ones with a perfect floret and

a rudimentary neuter one. *Glumes* 2, collateral, awned. *Glumellas* 2, outer one awned covering and adhering to the *caryopsis*.—Name of dubious origin.

* *Lateral spikelets perfect, middle ones usually neuter (or imperfect).*

1. *H. sylvaticum* Huds. (*Lyme-grass*, or *Wood B.*); all the glumes setaceous and scabrous (not ciliate), outer glumella of all the spikelets half the length of its awn. *Parn. Gr. t.* 130. *Elymus Europæus* L.: *E. B. t.* 1317.

Woods and thickets, especially in a chalky soil, apparently not rare in the midland and northern parts of England, but not found in Scotland. 4. 7, 8.

** *Lateral spikelets neuter, middle one perfect.*

2. *H. pratense* Huds. (*Meadow B.*); all the glumes setaceous and scabrous (not ciliate), outer glumella of the middle spikelets about as long as its awn, of the lateral ones with a short awn. *E. B. t.* 409: *Parn. Gr. t.* 11.

Moist meadows and pastures in England, frequent; rare in Scotland, as about Edinburgh and Ayr, but only occasionally, and perhaps introduced. 4. 6, 7.

3. *H. murinum* L. (*Wall or Mouse B.*, or *Way-Bennet*); glumes of the middle spikelet linear-lanceolate ciliate, of the lateral ones setaceous scabrous, outer glumellas of all the spikelets shorter than their awns. *E. B. t.* 1971: *Parn. Gr. t.* 10.

Waste grounds, by walls and road-sides; common in England; more rare in Scotland, but not uncommon along the east coast from Edinburgh to Bervie in Kincardineshire. 6. 6, 7.

4. *H. maritimum* With. (*Sea-side B.*, or *Squirrel-tail-grass*); inner glume of the lateral spikelets semi-ovate, the rest setaceous, all scabrous (not ciliate), awn of the outer glumella in the middle spikelet longer than those of its glumes in the lateral ones half as long. *E. B. t.* 1205: *Parn. Gr. t.* 10.

Light dry pastures and sandy ground near the sea, not rare in England. 6.—All our British grasses of this genus are admirably characterized by the form, &c., of their *glumes*. The present is the smallest species, procumbent at the base and glaucous.

37. *TRITICUM* Linn. Wheat. Wheat-grass. (Tab. VIII. f. 34.)

Spikelets solitary, transverse (the sides, not the backs, of the glumes and florets directed to the rachis), compressed, many-flowered. *Glumes* 2, opposite, nearly equal, both with 3 or more nerves or ribs. *Glumellas* 2; outer one lanceolate, acuminate or awned at the summit; inner bifid at the point, minutely ciliate on the ribs. *Caryopsis* free.—There are two natural

groups in this genus: 1st, the large annual species foreign to our country, which are cultivated so extensively as *bread-corn*; and, 2ndly, the smaller perennial species, many of which are natives with us. These some authors look upon as 2 distinct genera, *Triticum* and *Agropyrum*; we have only the latter genus or group in Britain.—Name: *Triticum*, “quod *tritum* est e spicis;” because it is thrashed or beaten from the spikes.

[1. *T. *cristatum* Schreb. (*crested W.*); spike short with closely imbricate 3—5-flowered spikelets, glumes subulate with a terminal awn 6-nerved, outer glumellas 5-nerved with an awn as long as themselves, rachis of the spike and spikelets slightly downy, leaves hairy on their upper surface, culm rough. *E. B.* t. 2267: *Parn. Gr.* t. 61.

“On steep banks and rocks by the sea-side between Arbroath and Montrose:” *G. Don*, who alone has found it. 4. 7.—A plant almost peculiar to the east of Europe and Asia, rarely occurring (and perhaps only when introduced) in the south of Europe, not, we believe, a native of France, and which could not have been indigenous to the station assigned above. On one side of the midrib (or that which runs into the awn) of the glumes there are 2, on the other 3 ribs. It somewhat resembles *Hordeum maritimum*, but is at once distinguished by the solitary several-flowered spikelets.]

2. *T. juncum* L. (*rushy Sea W.*); glaucous, spikelets distant 4—6-flowered, glumes obtuse or apiculate many-ribbed, outer glumella obtuse or slightly mucronulate 5-nerved, rachis of the spike glabrous brittle at the nodes in fruit, leaves involute pungent downy above with numerous soft very short spreading hairs on each rib, rhizome creeping. *E. B.* t. 814: *Parn. Gr.* t. 63.

Sandy sea-shores, frequent. 4. 7, 8.—Whole plant glaucous, rigid, $1\frac{1}{2}$ —3 feet high. *Spike* long. *Spikelets* oblong, much compressed, their *rachis* glabrous or slightly downy, especially on the angles. *Glumes* oblong-lanceolate, often 3-toothed at the summit, oblique, 6—10- (usually 6-) ribbed; the midrib, which is the longest, and sometimes forms a small apiculus, is not in the centre, but has more ribs or nerves on one side than on the other; besides these principal ribs, there are usually intermediate smaller ones at the base, which disappear about the middle. Outer *glumellas* similar to the glumes, but equal-sided, all or the upper ones with a blunt mucro formed by the excurrent midrib.

3. *T. laxum* Fries (*flat-leaved Sea W.*); glaucous, spikelets often approximate 5—8-flowered, glumes obtuse or mucronate about 7-ribbed, outer glumella obtuse apiculate 5-nerved, rachis of the spike smooth or minutely toothed on the angles tenacious, of the spikelets downy, leaves usually flat scabrous above with many acute points on each rib involute when dry, rhizome more or less creeping. *T. juncum* β . *Br. Fl.* ed. 6.

Sandy sea-shores, not uncommon. 4. 7, 8.—We admit this as a species with great hesitation. It has been long known to British collectors, and considered by most to be a form of *T. repens* with blunt glumes; by others, however, as *T. junceum* with flat leaves. In *T. junceum* the leaves are always involute and pungent at the point: when unrolled the ribs are seen covered with close-set soft down composed of numerous short hairs pointing obliquely and reaching to the similar hairs on the adjacent rib, thus forming a cover to the striæ between the ribs. In *T. laxum* these hairs are reduced to mere points arranged on the ribs almost in the same manner, but from their shortness cause the leaves to be scabrous to the touch; the leaves are usually flat, but Mr. Baker has observed them to be involute when the plant grows in dry sand. On the whole, this supposed species holds a middle place between *T. repens* and *T. junceum*. Mr. Bentham unites the three: as a single species, it is readily distinguished from *T. caninum* by the creeping rhizome.

4. *T. répens* L. (*creeping W.*, or *Couch-grass*); spike elongate, spikelets 4—8-flowered, glumes acuminate awned or awnless 5—7-ribbed, outer glumella acuminate or with a short awn 5-nerved, rachis of the spikelets scabrous, leaves plane or involute at the edge with a single row of hairs or points on the ribs on the upper side, rhizome creeping.—*α*. green, rachis of the spike glabrous or downy rough with ascending short bristles on the angles, leaves flat. *E. B.* t. 909: *Parn. Gr.* tt. 62, 63.—*β*. glaucous, rachis of the spike nearly quite smooth, leaves more or less involute at the edges. *T. littorale* Host.

Fields and waste places everywhere.—*β*. near the sea. 4. 6—8.—Awns scarcely as long as the glumella, often not exceeding half that length. In habit between the preceding and the following species. In *α*, there are numerous hairs on the nerves of the leaves, but mixed with points which are abortive hairs; in *β*. the hairs are few, and are sometimes all abortive. Var. *β*. is best distinguished from *T. laxum* by the acute, or (in this country we believe always) awned florets. The common variety is the pest of corn-fields.

5. *T. caninum* Huds. (*fibrous-rooted W.*); spike elongate, spikelets approximate 2—5-flowered, glumes 3—5-ribbed and as well as the 5-ribbed outer glumella acuminate awned, rachis of the spike hispid on the angles, of the spikelets harshly downy, leaves flat, root fibrous (perennial).—*α*. spikelets 4—5-flowered, awn of the florets usually longer than its glumella, leaves rough on both sides. *E. B.* t. 1372: *Parn. Gr.* t. 62. *Elymus* L.—*β*. spikelets 2—4-flowered, awn of the florets 3 (or more) times shorter than its glumella, leaves nearly smooth except on the margin. *T. biflorum* Mitten in *Lond. Journ. Bot.* vii. p. 532 (scarcely of *Brignoli*). *T. alpinum* Don.

Woods and banks, frequent.—*β*. Ben Lawers: *G. Don.* 4. 7.—Best distinguished from the three preceding by the want of a

creeping *rhizome*. The *glumes* have only 3 principal nerves or ribs, but occasionally a smaller and shorter one may be seen on the side between the lateral nerve and the midrib. What the true *T. biflorum* of Brignoli is, we do not know, further than that he describes it with an annual root, and constantly 2-flowered spikelets, and that he never found more than one tuft of it.

38. *BRACHYPÓDIUM* Beauv. False Brome-grass.
(Tab. VIII. f. 35.)

Spikelets solitary, transverse to the rachis, usually alternate and remote, linear, cylindrical-compressed, many-flowered. *Glumes* 2, opposite, unequal, shorter than the contiguous lowest floret, about 7-ribbed. *Glumellas* 2; outer one convex on the back, with several ribs, setigerous or awned at the extremity; inner one retuse, coarsely fringed on the ribs above. — *Ligule* short and irregularly incise. — Named from *βραχυς*, short, and *ποδιον*, a little foot; from the sessile or nearly sessile spikelets. This genus holds an intermediate place between *Bromus* and *Triticum*: from the former it differs by the sessile spikelets, and the terminal awn; from the latter, by the unequal glumes, long, almost cylindrical spikelets, and inner glumellas coarsely fringed on the ribs above the middle.

1. *B. sylvaticum* Beauv. (*slender F.*); spike drooping, spikelets solitary nearly cylindrical distichous, awns of the upper florets longer than their glumellas, leaves flat, root fibrous. *Festuca* Huds. *Bromus* Poll.: *E. B.* t. 729. *Triticum* Mærch: *Parn. Gr.* t. 61.

Woods and hedges, not unfrequent. 4. 6, 7. — *Culms* 2 feet high. *Leaves* broadly linear-lanceolate, usually flaccid and hairy on the upper surface. *Sheaths* usually hairy. *Glumes* unequal, lanceolate-acuminate, about 7-nerved. Outer *glumella* linear-lanceolate, about 7-nerved, scabrous or sometimes hairy. Whole plant sometimes as glabrous as the next species, and then only to be distinguished by the longer awns and the root.

2. *B. pinnatum* Beauv. (*Heath F.*); spike erect, spikelets nearly cylindrical distichous, awns of the upper florets shorter than their glumellas, leaves rigid, rhizome creeping. — *α.* leaves flat. *Festuca* Huds. *Bromus* L.: *E. B.* t. 730. *Triticum* Mærch: *Parn. Gr.* tt. 132, 133, 136, 137. — *β.* leaves involute. *Parn. Gr.* t. 134.

Open fields and heathy places in England, on chalky soil. — *β.* near Bath. 4. 7. — *Spikelets* scabrous or hairy. *Glumes* and outer *glumellas* about 7-nerved. A monstrosity occurs with a tuft of spikelets at the same point of the rachis. (*Parn. Gr.* t. 135.)

39. *LÓLIUM* Linn. Rye-grass. (Tab. VIII. f. 36.)

Spikelets solitary, compressed, approximate, placed edgewise to the canaliculate rachis, alternate, with 3 or more perfect florets. *Glumes* solitary, or 2 placed edgewise to the rachis and the one next it small; lower one with several nerves, about as long as or longer than the lowest contiguous floret. *Glumellas* 2, outer one awnless or awned.—Name: *λαιον ολειν*, to *destroy the crop*; or rather from *lola*, the appellation in Celtic of *L. temulentum*, to which the ancients as well as the moderns attributed poisonous qualities. In some countries, it is erroneously believed that the *wheat* changes into *darnel*.

1. *L. perénne* L. (*perennial* or *beardless R.*); spikelets 6—8-flowered, glume solitary scarcely longer than the lowest floret, florets lanceolate awnless or nearly so, root producing leafy barren shoots. *E. B.* t. 315: *Parn. Gr.* t. 65.

Way-sides, pastures, and waste places, frequent. ♀ or ♂. 6, 7.—*Culms* 1—2 feet high. *Spike* with the general aspect of *Triticum repens*, sometimes, from luxuriance when cultivated, compound. *Florets* linear-oblong, nerved. The root, which is perennial in the wild plant, ceases to be so in particular situations, and becomes biennial even when the greatest care has been taken to obtain the seed from genuine perennial plants.

[2. *L. * Itálicum* A. Braun (*Italian R.*); spikelets 6—14-flowered, glume solitary scarcely as long as the lowest floret, florets lanceolate with a long awn, roots producing leafy barren shoots. *L. perenne* var. *Parn. Gr.* tt. 138, 139, 140, 141. *L. perenne* β. *aristatum* Bab. ? *L. multiflorum* *Brit. Fl.*

Many parts of England and Scotland, but apparently only near places where it had been cultivated. ♀ or ♂. 6.—The *perennial* state of this species appears to be the wild one, the root having, like the preceding species, become biennial by over-cultivation; we fear too that *L. multiflorum* Lam. is another degenerated form, the root having become annual, and no longer capable of producing leafy barren shoots. It appears to us to differ in no respect from the preceding species, except by the awn. Some botanists however consider that both have sometimes awned spikelets and that they differ by *L. perenne* having the young leaves simply folded, the other with their margins involute.]

[3. *L. * linícola* Sonder (*annual* or *Flax R.*); spikelets oblong or ovate 7—11-flowered, glume solitary reaching to the middle (or further) of the spikelet, florets shortly awned or awnless elliptical in fruit tumid, root annual without barren leafy

shoots. — *Mitten* in *Lond. Journ. Bot.* vii. p. 531: *E. B. S.* t. 2955.

On cultivated land, amongst various crops, about Hurstpierpoint, Sussex; field near Catterick Bridge, Yorkshire. ☉. 7. — With this we are scarcely acquainted, and authentic specimens appear to have been equally unknown to Kunth. It seems only to differ from the next by the glumes being considerably shorter than the spikelets.]

4. *L. temuléntum* L. (*Darnel*); spikelets about 6-flowered equal to or shorter than the glume, florets awned or awnless elliptical in fruit tumid, root annual without barren shoots. — α . florets with rigid awns about as long as or longer than the glumella. *E. B.* t. 1124: *Parn. Gr.* tt. 64, 142. — β . florets with soft imperfect awns or awnless. *L. arvense* *With.*: *E. B.* t. 1125.

Corn-fields. Not common in Scotland. ☉. 6—8. This is best distinguished from *L. perenne* by the truly annual root (without barren shoots), and the tumid florets.

†† *Rachis alternately excavated between the joints.*

40. *LEPTÚRUS* *R. Brown.* Hard-grass. (Tab. VIII. f. 37.)¹

Spike terete, solitary, separating at the joints. *Spikelets* solitary in each joint, imbedded in cavities alternately on opposite sides of the rachis and placed edgewise to it, with 1 (or 2) fertile florets and a superior minute rudimentary (sometimes obsolete) neuter one. *Glumes* (1 or) 2, collateral, on the opposite side from the rachis and covering the floret, cartilaginous, several-nerved. *Glumellas* of the fertile floret 2, scarious, awnless.—Name from λεπτος, slender, and ουρα, a tail; in allusion to the slender spikes.

1. *L. incurvátus* Trin. (*Sea H.*); annual, spike subulate, glumes 2, without a membranous keel. — α . spike curved. *Rottboellia* L.: *E. B.* t. 760: *Parn. Gr.* t. 2. — β . spike filiform nearly or quite erect. *L. filiformis* Trin. *Rottboellia* Roth. *R. incurvata* var. *filiformis* Hook.: *Parn. Gr.* t. 3.

Sea-shores, but not common. Frequent on the Irish coast. — β . many places along the coast of England. Rare in Scotland, as near Aberlady. ☉. 7. — *Culms* 2—8 inches high, more or less curved, especially the spike.

¹ Although for aiding the student we describe the spikelets as solitary with 2 glumes, this is not the case, the spikelets being actually in pairs in *Lepturus* (*Diplerma*) *incurvatus* and *filiformis*; the fertile one is sessile, having a single glume; the other which is pedicellate, is reduced to the mere pedicel resembling the glume of the sessile spikelet, and is usually described as a second glume belonging to it. In the true species of *Lepturus*, there is only one spikelet at each joint, and it is sessile and with one glume.

** *Spikelets with one perfect floret inserted on different sides of the compressed rachis, unilateral, forming a simple spike-like raceme. Styles very short. Stigmas elongate filiform.*

41. *KNÁPPIA* Smith. *Knappia*. (Tab. IX. f. 39.)

Spikelets very shortly stalked, solitary, arranged on two sides of the simple rachis and forming a simple unilateral spike-like raceme, 1 flowered, awnless. *Glumes* 2, opposite, truncate, nearly equal, rather longer than the floret, membranous, 1-nerved. Outer *glumella* hairy, membranous, deeply toothed at the end; inner narrower, sometimes wanting. *Styles* distinct, very short. *Stigmas* filiform.—Named in honour of *Mr. Knapp*, an English botanist, author of a work on British grasses.

1. *K. agrostidea* Sm. (*early K.*): *E. B.* t. 1127: *Parn. Gr.* t. 73. *K. verna* Trin. *Agrostis minima* L. *Chamagrostis Borkh.* *Sturmia Hoppe.* *S. verna Pers.* *Mibora Adans.*

Sandy pastures by the sea, rare. Essex, near the mouth of the Thames. Wales, and S. W. coast of Anglesea, frequent. Gullane Links, Haddington: introduced. Jersey. ☉. 3, 4. — A beautiful and minute grass, of which only a solitary species is known. *Root* fibrous. *Stems* several from the same root. *Leaves* short, linear, rough, equalling in length their white inflated *sheaths*. *Glumes* purplish. *Glumellas* sometimes 2, white, delicate, the outer one much the larger and embracing the inner, which last is often wanting.

*** *Spikelets (with one perfect floret) arranged only on one side of the partial rachis and forming a racemose or digitate compound spike or raceme. Styles elongate. (Tab. IX. f. 42. g.) (Gen. 42—44.)*

42. *SPARTINA* Schreb. Cord-grass. (Tab. VIII. f. 38.)

Spike compound. *Partial spikes* erect, racemose. *Spikelets* sessile, awnless, arranged alternately in two rows on one side of the *partial rachis*, laterally compressed, with one *fertile* and scarcely any rudiments of a *neuter floret*. *Glumes* 2, unequal, lanceolate, compressed. *Glumellas* 2, compressed, lanceolate, acuminate. *Styles* elongate, united half-way up. *Stigmas* elongate.—*Ligules* very short.—Name derived from its similarity to the *Lygeum Spartum*, or *Bastard mat-weed*, and that from σπαρτον, applied to plants of which the bark, branches, and leaves are tough, and made into cords, ropes, &c.

1. *S. stricta* Roth (*twin-spiked C.*); partial spikes 2—3, larger glume and outer glumella 1-nerved hairy, partial rachis scarcely produced beyond the terminal spikelet, leaves shorter than the spikes tapering at the base articulated upon the sheath lower ones deciduous. *Parn. Gr.* t. 74. *Dactylis Soland.*: *E. B.* t. 380.

Muddy salt-marshes, on the east and south-east coasts of England. 4. 8.—A remarkably stiff rigid plant. Culms 1—2 ft. high, covered with the sheathing bases of the short pungent leaves (involute when dry). Inner *glumella* longer than the larger *glume*, which is a third longer than the smaller one.

2. *S. alterniflora* Loisel. (*many-spiked C.*); partial spikes numerous, larger *glume* 5-nerved fringed with a few distant short bristly hairs on the keel otherwise glabrous, outer *glumella* 3-nerved glabrous slightly toothed on the keel above, partial rachis much produced beyond the spikelets with a flexuose awn-like point, leaves equal to or longer than the spikes dilated at the base continuous with the sheath and all persistent. *E. B. S.* t. 2812: *Parn. Gr.* t. 75. *S. glabra* Muhl. *S. lævigata* Link.

Itchin Ferry, Southampton. 4. 8.—Inner *glumella* longer than the outer one, but shorter than the larger *glume*, which is 2—3 times longer than the smaller one. Much taller than the preceding; but Mr. Bentham states that in North America, where it is frequent, it passes gradually into the other.

43. CYNODON Rich. Dog's-tooth-grass. (Tab. IX. f. 40.)

Spike compound. *Partial spikes* spreading, digitate or racemose. *Spikelets* almost sessile, awnless, arranged in a single row on one side of the *partial rachis*, laterally compressed, with one fertile and a rudimentary neuter floret. *Glumes* 2, nearly equal, spreading. *Glumellas* 2, compressed, outer one cymbiform, at length hardened and inclosing the *caryopsis*. *Styles* 2, elongate, distinct. *Stigmas* oval.—Named from *κυνων*, a dog, and *οδους*, a tooth.

1. *C. Dactylon* Pers. (*creeping D.*); partial spikes 3—5 digitate, outer *glumella* longer than the *glumes* glabrous on the sides somewhat ciliate on the keel and margins, leaves downy beneath, stem creeping at the base. *E. B.* t. 850: *Parn. Gr.* t. 72.

On the sandy sea-shore, rare. Cornwall, near Penzance; Studland, Dorset; Devonshire. 4. 7, 8.—Culms 4—6 inches high. Leaves on the barren shoots flat and spreading, on the stems usually folded. *Ligule* a tuft of a few hairs. *Spikelets* purplish. *Neuter floret* a mere beardless bristle thickened at the end, more than half the length of the *glumellas*.

44. DIGITARIA Scop. Finger-grass. (Tab. IX. f. 41.)¹

Spikes compound. *Partial spikes* somewhat digitate. *Spikelets* in pairs on short unequal pedicels, arranged on one side of

¹ Although, to simplify the arrangement, we have placed this genus at a considerable distance from *Panicum*, most of the species scarcely differ from it, while some foreign ones have been referred to *Paspalum*.

the *partial rachis*, awnless, flat in front, convex on the back, with one perfect floret, and one barren or neuter in front. *Glumes* 2, lower one much smaller or obsolete. *Barren* or *neuter* floret as large as the fertile one, with 1—2 *glumellas*; outer *glumella* resembling the upper glume. Outer *glumella* of the *upper* or *fertile* floret convex, embracing the inner one, at length hardened and enclosing the *caryopsis*. *Styles* 2, elongate, distinct. *Stigmas* ovate.—Named from *digitus*, a *finger*.

[1. D. **sanguinális* Scop. (*hairy F.*); culm creeping at the base, leaves and tuberculate sheaths hairy, stipules membranous, partial spikes 3—5 somewhat digitate, partial rachis flexuose, spikelets oblongo-lanceolate, lower glume minute acute nerveless, upper lanceolate almost glabrous about half the length of the fertile floret, neuter glumella glabrous or slightly pubescent on the margin. *Parn. Gr.* t. 70. *Panicum L.*: *E. B.* t. 849.

Occasionally in sandy cultivated fields near London. ☉. 7, 8.—About a foot long, branched at the base, erect or ascending. In this and the next the *spikelets* are secund, adpressed to the flattened rachis, 2 together, one nearly sessile, the other on a distinct short stalk.]

2. D. **humifúsa* Rich. (*glabrous F.*); culms depressed, sheaths and leaves glabrous, stipules membranous, partial spikes 2—4 somewhat digitate, partial rachis nearly straight, spikelets ovate-elliptical, lower glume very minute truncate or wanting, upper oblong pubescent nearly as long as the fertile floret, neuter glumella pubescent. *E. B. S.* t. 2613: *Parn. Gr.* t. 71. *Syntherisma glabrum Schrad.* *Panicum Gaud.*

Rare. On loose sand at Weybridge, Surrey; Hants; Ipswich, Suffolk; Norfolk. ☉. 7, 8.—Generally smaller and more depressed than the preceding, and of a more purple hue. Partial *spikes* usually fewer. *Spikelets* more ovate, more convex on the back and more pubescent. *Neuter glumella* purplish.

CLASS III.

ACOTYLEDONOUS¹, or FLOWERLESS PLANTS.

Plants without real flowers analogous to what are found in the Dicotyledonous or Monocotyledonous classes or anything that can be considered as true Stamens and

¹ From α, *without*, and κοτυληδων, a *cotyledon*.

Pistils. The organs of reproduction, called by some seeds, but by others spores or sporules, are without any distinct embryo as in true seeds, and consequently without any cotyledon. This Class corresponds with the 24th, **CRYPTOGAMIA**, in the Linnæan System.

SUB-CLASS I. FILICES¹ Linn. (ORD. CVIII.—CXIII.)
(Tab. IX. f. 1—4, X. XI.)

Fructification generally of one, but sometimes of two kinds, consisting of *seeds, spores, or sporules*, included in *capsules* (called also *thecæ* or *sporangia*) sometimes surrounded with an elastic ring, and these either naked or covered by a membrane (*indusium* or *involucre*); generally collected into clusters (*sori*), or spikes, situated at the back of the fronds, or marginal, terminal, axillary, or radical. — *Usually perennial plants, with tubular vessels among the cells, bearing fructification during a great part of the year. In most, as in the true Ferns, the leaves are connate with the stem, so as to constitute fronds; in others, the leaves are distinct, as in LYCOPODIUM, which in general appearance comes nearest to the Mosses.*

CONSPECTUS OF THE ORDERS.

108. **POLYPODIACEÆ.** Capsules dorsal or marginal, surrounded by a ring, reticulate and pellucid, opening transversely and irregularly. Fronds circinate in veneration.
109. **OSMUNDACEÆ.** Capsules clustered on the margin of a transformed frond, with an obscure ring, reticulate and pellucid, opening by two regular valves. Fronds circinate in veneration.
110. **OPHIOGLOSSACEÆ.** Capsules arranged on the margin of a contracted frond, sessile, without reticulation or a ring, coriaceous, opaque. Fronds straight in veneration.
111. **LYCOPODIACEÆ.** Capsules without a ring, sessile in the axils of leaves or bracteas, or lodged in a cavity in their base. Leaves cauline or rarely all radical. Veneration straight (not circinate).
112. **MARSILEACEÆ.** Capsules without a ring, within coriaceous involucre that are situated near the root of the plant, not sunk in the leaves. Veneration circinate or involute.
113. **EQUISETACEÆ.** Fructification in terminal spikes or catkins, consisting of peltate polygonous scales, on the under side of which are involucre, which contain numerous globose bodies enfolded by 4 clavate filaments. Veneration straight.

¹ The *Filices* are here considered as a Sub-class, of which the groups or Orders are very distinct one from another and easily recognized; we have therefore given short, but we trust sufficient characters of them.

ORD. CVIII. POLYPODIACEÆ *R. Br.* (Tab. IX. f. 1—4,
X. and XI. f. 1.)

Capsules dorsal or marginal, surrounded by a ring, reticulate and pellucid, opening transversely and irregularly. *Fronde* circinate in veneration.

A. *Capsules* opening transversely, placed on the back of the frond, but sometimes close to its margin; their ring vertical, usually incomplete.

* *Sori* neither furnished with a conspicuous involucre nor covered by the reflexed margin of the frond.

1. CETERACH. *Sori* linear, on reticulate veins, covered with chaffy scales.

2. GYMNOGRAMME. *Sori* oblong or linear, on forked veins, naked.

3. POLYPODIUM. *Sori* roundish.

** *Sori* with an involucre, or covered by the reflexed margin of the frond.

† *Sori* roundish. *Involucres* placed upon the back of the lateral veins.

‡ *Fertile fronds* remaining similar to the barren ones.

4. WOODSIA. *Sori* roundish. *Involucre* below the sori, more or less cut at the margin. Veins forked.

5. ASPIDIUM. *Sori* roundish. *Involucre* above the sori, circular (*Polystichum*) or reniform (*Lastrea*). (Veins forked in British species.)

6. CYSTOPTERIS. *Sori* roundish. *Involucre* cucullate at the base, attached below. *Sorus* on one side.

†† *Fertile fronds* very dissimilar to the barren ones, each pinnule wrapt round the sori on it, and resembling a berry.

6^a. ONOCLEA. *Sori* much approximate, afterwards confluent.

†† *Sori* oblong or linear. *Involucres* attached by the one side to the lateral veins, opening at the other.

7. ASPLENIUM. *Involucre* single, linear or oblong-linear, or oblong-reniform, arising from lateral veins, opening towards the midrib. (Veins forked in British species.)

8. SCOLOPENDRIUM. *Involucre* linear and long, double, the two portions opening towards each other.

††† *Sori* marginal or parallel to the midrib, covered either by an involucre or by the reflexed margin of the frond.

‡ *Fertile and barren fronds* similar.

9. PTERIS. *Sori* continuous, linear, at the margin of the frond. *Involucre* consisting of the reflexed margins.

12. ADIANTUM. *Sori* oblong or roundish, marginal. *Involucre* formed of the reflexed margin or lobes of the frond, and bearing the capsules.

†† *All or most of the fertile fronds* dissimilar to the barren ones.

10. CRYPTOGRAMME. *Sori* roundish at the margin of the frond, at length confluent and covered by the reflexed margins meeting in the middle.

11. BLECHNUM. Sori linear, parallel on each side of the midrib, distant from the margin.

B. Capsules opening irregularly, placed on a receptacle at the margin of the frond and terminating a vein; their ring transverse.

13. TRICHOMANES. Sori marginal. Involucre monophyllous, subcylindrical. Receptacle filiform.

14. HYMENOPHYLLUM. Sori marginal. Involucre 2-valved. Receptacle subclavate.

A. Capsules opening transversely, placed on the back of the frond but sometimes close to its margin; their ring vertical, usually incomplete. Cellular tissue of the frond compact.¹ POLYPODIÆ. (Gen. 1—12.)

1. CÉTÉRACH Willd. Ceterach. (Tab. IX. f. 1.)

Sori oblong or linear straight, scattered, arising from reticulate veins, covered (as is the whole back of the frond) with chaffy scales. Involucre none (or obsolete).—Name: from the Celtic *cedor wrach*, double rake; or perhaps from *chetherah*, a similar plant employed by the Arabian and Persian physicians for obstructions in the viscera.

1. *C. officinarum* Willd. (common *C.*, or *Scale-fern*); fronds pinnatifid covered beneath with imbricate chaffy scales, segments ovate obtuse, scales entire. *Newm.* p. 293.² *Grammitis Ceterach Sw.* *Scolopendrium Sm.: E. B. t.* 1244. *Asplenium L.* *Notolepeum Newm.* ed. 3, p. 277.

Rocks and old walls, chiefly in limestone districts in England and Ireland. Rare in Scotland; near Perth; Paisley; Glasgow; walls about Drumlanrig, Dumfriesshire; Kilfinnan, Argyleshire. *Æ.* 4—10.—*Mr. W. Wilson* finds traces of an involucre on the lower side of the sorus, viz. "a narrow membrane, fringed with the same chaffy scales which cover the back of the frond:" see also *Bauer and Hooker's Genera of Ferns*, t. 113, A.

2. GYMNOGRÁMME Desv. Gymnogram.

Sori oblong or linear on forked free veins, not covered with scales. Involucre none.—Name: from *γυμνος*, naked, and *γραμμή*, a line.

¹ The compactness of the tissue arises not only from the small size of the cellules, but also from there being several in the thickness of the frond, giving it a certain degree of opacity: in the next group (B.), the cellular tissue is lax and almost transparent, from the larger size of the cellules, and their being often only one in the thickness of the frond, in this respect resembling the leaves of most Mosses, but differing from them by having the nerves and veins composed of that kind of vascular tissue called ducts.

² We shall refer to the figures in Newman's History of British Ferns, edition second, by merely quoting the page; and to the third edition by the addition of ed. 3. When the name only is referred to, we shall merely indicate the authority by *Newm.*

1. *G. leptophýlla* Desv. (*slender G.*, or *annual Maiden-hair*): slender fragile, fronds ovate or oblong thin bitripinnate, pinnæ obovato-euneate bi-trifid or lobed, lobes obtuse, sori often confluent, rachis dark brown glossy winged above, root fibrous annual. *Hook. et Grev. Ic. Fil.* t. 25: *Newm.* ed. 3, p. 11. *Polypodium?* *L.*

Moist banks in Jersey. ☉. 3—5.—The plant is truly annual, the root and fronds dying away entirely in May, and springing again from seed in the autumn. Height of the plant from 2 to 4, or rarely 6 inches.

3. *POLYPODIUM* Linn. Polypody. (Tab. IX. f. 2.)

Sori roundish. *Involucre* 0. Margin of the *frond* not reflexed.—Veins *simple or simply branched (in the British species)*.—Named from πολυς, *many*, and ποδιον, dim. of πους, a *foot*; from the numerous roots, or from the segments of the fronds.

* *Veins branched, the lowest veinlet on the side next the midvein short, bearing a sorus at its apex; the others barren, and disappearing near the margin.*

1. *P. vulgäre* L. (*common P.*); fronds deeply pinnatifid, the segments linear-lanceolate obtuse erenulate approximate, upper ones gradually smaller. *E. B.* t. 1149: *Newm.* p. 111. *Ctenopteris Newm.* ed. 3, p. 41.

Rocks, walls, trunks of trees, and banks; frequent. 4. 6—9.—*Rhizome* creeping, very scaly. The lobes of the *fronds* are sometimes deeply serrate and even pinnatifid or laciniate, as it has been found in Ireland and Wales, when it becomes the *P. Cambricum* L.

** *Veins simple, all reaching to the margin or nearly so, and bearing sori near the apex.*

2. *P. Phegopteris* L. (*mountain P.*, or *Beech-fern*); fronds pinnate, pinnæ pinnatifid the two lowermost ones distinct pointing downwards and forwards, their segments linear-lanceolate obtuse entire ciliate the lowermost ones adnate-decurrent, veins hairy, sori marginal. *E. B.* t. 2224: *Newm.* p. 122. *Gymnocarpium Newm.* ed. 3, p. 49. *P. Thelypteris E. B.* t. 1018.?

Damp shady places, in mountainous countries. 4. 6—8.

3. *P. Dryopteris* L. (*tender three-branched P.*, or *Oak-fern*); fronds ternate bipinnate thin and glabrous, divisions spreading and deflexed, the segments obtuse suberenate, sori marginal. *E. B.* t. 616: *Newm.* p. 123. *Gymnocarpium Newm.* ed. 3, p. 57.

Dry shady places, in mountainous countries. Common in Scotland. 4. 7.—*Rhizome* filiform, extensively creeping.

4. *P. calcáreum* Sm. (*rigid three-branched, or limestone P.*); fronds subternate bipinnate rather rigid subpubescent and always minutely glandular beneath, divisions sometimes spreading and deflexed, segments obtuse somewhat crenate, sori marginal finally confluent. *E. B. t. 1525: Newm. p. 135. P. Robertianum Hoffm. Gymnocarpium Newm. ed. 3, p. 63.*

On broken limestone ground in the northern and western parts of England. 4. 7.—*Rhizome* stouter and less extended than in the preceding; from which it is also distinguished by its thicker and more rigid texture, consequently more erect habit, its more pectinate subdivision, and by the minute glandular pubescence covering the rachis and midrib of the pinnæ; but we consider it a very doubtful species.

5. *P. alpêtre* Hoppe (*Alpine P.*); glabrous, fronds oblong-lanceolate bipinnate, pinnules oblong-ovate sometimes slightly falcate subacute sessile more or less deeply pinnatifid, segments ovate inciso-serrate, stipes short with large scales. — *α. elutius*; stipes rather short, pinnæ narrow-lanceolate broadest at the base spreading or ascending, pinnules crowded. *Pseudathyrium Newm. ed. 3, p. 199. Aspidium Schk. Fil. p. 58, t. 60 (A. umbrosum on the plate) excellent. — β. humile*; stipes scarcely any, pinnæ short ovato-lanceolate spreading or deflexed, pinnules rather distant. *Pseudathyrium flexile Newm. ed. 3, p. 203.*

Mountains of Invernesshire, Aberdeenshire, Forfarshire, and Perthshire; at an elevation of from 2000 to 4000 feet.—*β. Glen Prosen*, and probably elsewhere, mixed with *α.* 4. 7, 8.—Very similar to and easily mistaken for *Asplenium Filix-femina*: the fructification, however, will at once distinguish it.

4. Woodsia Br. Woodsia. (Tab. IX. f. 3.)

Sori scattered, roundish, having beneath them an *involucre* which is cut at the edge into many, often capillary, segments.—Named in compliment to *Joseph Woods, Esq.*, author of an excellent “*Monograph of the British Roses*,” “*Tourist’s Flora*,” &c.

1. *W. hyperborea* Br. (*round-leaved W.*); fronds lanceolate pinnate, pinnæ bluntly triangular or oval inciso-pinnatifid, rachis and stipes with scattered hairs. *Polypodium Sw. W. alpina Gray: Newm. p. 143; ed. 3, p. 79. — α. pinnæ broadly oval, lobes 3—5 roundish-obovate. Pol. hyperboreum α. Wahl. Fl. Lapp. p. 279. — β. pinnæ longer more pinnatifid, lobes 5—9 oval. P. hyperboreum β. gracile Wahl.: E. B. t. 2023.*

On Snowdon, Caernarvonshire. Ben Lawers and near Crieff, Perthshire; Glen Fiadh, Clova.—*β. Ben Lawers. 4. 7.*—About the same size as the next, and perhaps not specifically distinct. Mr. Babington and Mr. Bentham unite them.

2. *W. Ilvénsis* Br. (*oblong W.*); fronds lanceolate pinnate, pinnæ oblong deeply pinnatifid with many oblong segments, rachis and stipes with numerous chaffy scales. *E. B. S.* t. 2616: *Newm.* p. 136, 137; ed. 3, p. 71, 73. *Acrostichum* L.

Mountains, rare. Caernarvonshire. Falcon Clints near Caldron-Snout, Teesdale in Durham. Hills to the north of Moffat; Clova mountains. 4. 7—9.—Plant small, 2—5 inches high.

5. *ASPIDIUM* Sw. Shield-fern. (Tab. IX. f. 4.)

Sori roundish, scattered. *Involucre* above the *sori* circular, or reniform.—Veins simple or forked (*in the British species*).—Name: ἀσπίδιον, a small shield; which its involucre resembles, especially in the species of the first division.

* *Involucre* circular, attached by the centre, hence peltate. *Aspidium* Br. *Polystichum* Roth (in part). (Tab. IX. f. 4. a. b.)

1. *A. Lonchitis* Sw. (*Alpine S.*, or *Holly-fern*); fronds rigid linear-lanceolate pinnate, pinnæ lanceolate-falcate acute ciliato-serrate, the upper base acutely auricled the lower one euneate, superior pinnæ bearing the *sori*, stipes chaffy. *Polypodium* L.: *E. B.* t. 797. *Polystichum* Roth: *Newm.* p. 166, 167; ed. 3, p. 107, 108.

Shady clefts of rocks and under stones, on high mountains. Yorkshire; Caernarvonshire. Scotland. Ireland. 4. 6, 7.

2. *A. lobatum* Sw. (*close-leaved prickly S.*); fronds oblong-lanceolate bipinnate (or when starved pinnate), pinnules rigid convex ovate subclunate acuminate aristate oblique and euneate at the base and decurrent, the margins faintly serrate spinulose, with a distinct tooth at the base of the upper side, the one next the main rachis longer than the rest, stipes and rachis more or less chaffy, *sori* confined to the upper half of the fronds. *E. B.* t. 1563. *Polystichum aculeatum* *Newm.* (in part) p. 169; ed. 3, p. 111.

Moist woods, shady banks, and rocky places. 4. 7.—A stunted form of this sometimes occurs with the pinnules combined, so as to form only a pinnate frond. This is *A. aculeatum* β. Sm. and *Filix lonchitidi affinis* of Ray: but as cultivation in a better soil causes the root to produce bipinnate fronds, it can scarcely be deemed a distinct variety.

3. *A. aculeatum* Sw. (*common prickly S.*); fronds broadly lanceolate bipinnate, pinnules subrigid somewhat convex slightly stalked ovate subclunate acuminate or acute aristate obliquely truncate and auricled at the base on the upper side, the one next the main rachis somewhat larger than the rest, the margins distinctly serrate and spinulose, stipes and rachis chaffy, *sori*

copious. *E.B.* t. 1562 (bad). *Polystichum Roth: Newm.* (in part).

Woods and hedge-banks in England and Ireland; rare in Scotland. 4. 7.—This is exactly intermediate between the last and the next species, and so partakes of the characters of both that by some botanists it is referred to *A. lobatum*, by others to *A. angulare*. It appears to us that all of them must be united as in Mr. Bentham's Handbook, or constitute three species, as done by Smith.

4. *A. anguläre* Willd. (*angular-leaved S.*); fronds flexible broadly lanceolate bipinnate, pinnules subrigid plane stalked ovate sublunate obtuse or oblong and acute aristate obliquely truncate at the base with a large auricle on the upper side, the margins deeply serrate spinulose, the lowermost ones often deeply pinnatifid or pinnate, stipes and rachis very chaffy, sori copious. —*a.* pinnules next the main rachis scarcely longer than the rest subpinnate. *E. B. S.* t. 2776. *Polystichum Newm.* p. 174; ed. 3, p. 118. *A. lobatum Willd. ?*—*β.* subtripinnate, pinnules especially the lower ones and the much larger one next the main rachis distinctly pinnate. *Newm.* p. 182; ed. 3, p. 121.

Woods and hedge-banks, frequent in England, as far north as Yorkshire and Westmoreland. N. Wales. Pease Bridge, Berwickshire; Skelmorlie, Ayrshire. Colin Glen, Belfast. 4. 7.

** *Involucre orbicular-reniform, attached by the sinus.* *Nephrodium Rich.* (in part). *Lastrea Bory.* (Tab. IX. f. 4. c. d.)

† *Lateral veins of the pinnules or segments simple or forked. Sori on the simple veins, or on either or both branches of the forked ones.*

5. *A. Thelypteris* Sw. (*Marsh-fern*); fronds pinnate, pinnæ linear-lanceolate pinnatifid and as well as the rachis slightly pubescent, the segments ovate acute entire, veins nearly all forked, sori parallel to the margin contiguous ultimately confluent. *Polypodium L. Lastrea Presl: Newm.* p. 183, 186. *Hemestheum Newm.* ed. 3, p. 123, 128.

Marshy and boggy places. Not uncommon in England. Various places in Ireland. Rare in Scotland. 4. 7, 8.—*Rhizome* creeping. *Frond* pubescent but not glandular. The sori, if examined when young, are half way between the midrib and the margin; but when old, they cover nearly the whole under side of the segments or appear marginal from the margin becoming recurved.

6. *A. Oreópteris* Sw. (*Heath S., or Mountain-fern*); fronds pinnate, pinnæ lanceolate pinnatifid glabrous glandular beneath, the segments lanceolate obtuse entire, lowermost ones larger, veins nearly all simple, sori submarginal. *Polypodium Ehrh.: E. B.* t. 1019. *Lastrea Bory: Newm.* p. 187, 190. *L. montana Newm.* ed. 3, p. 129, 133.

Mountainous countries, in heaths and dry pastures. Abundant in Scotland. 4. 7.—*Rhizome* tufted. *Involucres* small, inconspicuous. Segments of *fronds* not recurved at the margin.

†† *Lateral veins of the pinnules branched or forked. Sori upon the lower veinlet on the side next the midvein, the other veinlets barren.*

‡ *Involucre very convex.*

7. *A. Filix-más* Sw. (*Male-fern.*); fronds bipinnate or rarely pinnate glabrous, lower pinnæ smaller than those next them, pinnules oblong with a broad base conspicuously serrate or incise but not spinulose, sori near the midvein, stipes and rachis chaffy, involucre persistent not ciliate with glands. *Lastrea Presl: Newm.* p. 197, 201. *Dryopteris Newm.* ed. 3, p. 183, 186.—*α. vulgatum*; frond bipinnate, pinnæ crowded elongate acuminate, pinnules blunt serrate, the lower ones distinct. *E. B.* t. 1458 and t. 1949 (*A. cristatum*).—*β. incisum*; pinnules less crowded oblong-lanceolate incise-dentate. *A. crosum Schkuhr Fil.* t. 45.? *A.* affine *Fisch.* *Dryopteris Newm.* ed. 3.—*γ. abbreviatum*; fronds pinnate, pinnæ oblong obtuse pinnatifid or incise or crenate with one row of sori on each side of the midrib. *Lastrea Newm.* p. 202. *Polystichum abbreviatum DC.* *Dryopteris Newm.* ed. 3, p. 193.

Woods and shady banks, frequent. — *β.* Rather rare in Scotland. — *γ.* Ingleborough and Teesdale, Yorkshire; Cumberland; Wick, Gloucestershire. Snowdon. Ennis, Co. Clare. Glen Isla, Forfarshire. 4. 6, 7.—The *involucres*, when young, quite enclose the *sori*, the margin being bent in under the capsules. A beautiful though very common fern, the *fronds* in *α.* and *β.* being sometimes 3—4 feet high, and growing in a circle. Mr. Borrer finds a state of our *α.* common in Devonshire, with more copious and brighter-coloured scales, and with a bright golden-yellow tinge on the whole frond; the pinnules are more blunt (almost truncate) and less distinctly serrate at the sides than usual; the same has also been found in Yorkshire, various parts of Durham, and in Scotland, and is probably not uncommon: it is the *Dryopteris Borreri* of Newman. As to our var. *γ.* we should have considered it a mere stunted form of *α.*, but Mr. Moore states it to be reproduced from seed; he does so, however, also of the golden-scaled one noticed above, to which we cannot assign better distinguishing characters than the unimportant ones already mentioned.

8. *A. remotum* A. Braun (*Braun's S.*); fronds oblong-lanceolate bipinnate glabrous, pinnæ acuminate lower ones smaller than those next them, lower pinnules distinct oblong acute shortly stalked deeply pinnatifid, their segments and upper pinnules oblong obtuse with a broad base mucronato-serrate but not spinulose, sori near the midvein, stipes and rachis chaffy, involucre persistent not ciliate with glands. *Polystichum Koch.* *Lastrea Moore* in *Journ. Proceed. Linn. Soc.* iv. p. 193.

Windermere, Westmoreland. \mathcal{L} . 8, 9.—This we have not seen; from Mr. Moore's description it appears to be merely a luxuriant state of the last species, with the lower pinnules more developed and assuming the form of small pinnæ; their segments however, and the upper pinnules, are as in *A. Filix-mas*.

9. *A. rigidum* Sw. (*rigid S.*); fronds lanceolate bipinnate glandular beneath, lower pinnæ as long as those next them, pinnules narrow-oblong obtuse slightly pinnatifid contracted at the base the segments broad and rounded deeply 2—5-dentate (without spinulose points to the teeth), stipes and rachis chaffy, involucre persistent fringed with stalked glands. *E. B. S. t.* 2724. *Lastrea Presl: Newm.* p. 191, 196. *Lophodium Newm.* ed. 3, p. 175, 180.

On Ingleborough, and rocks above Ingleton and Settle, Yorkshire; Arnside Knot, Westmoreland, abundant. \mathcal{L} . 7, 8. — *Fronds* 1—2 feet long; pinnæ very numerous, closely set, of nearly the same width throughout (often widest in the middle), with numerous rounded lobes; teeth 2—3 rarely more, broad and triangular. The *involucre* agrees with that of *A. dilatatum* α . in having a glandular margin, and in not being bent in under the sorus, but it is permanent, large, and conspicuously convex as in *A. Filix-mas*. It agrees also with this last in the oblique insertion of the pinnæ on the rachis, so that they lie in different planes, but it differs in not having the lower pinnæ gradually diminished.

‡‡ *Involucre flat or nearly so.*

10. *A. cristatum* Sw. (*crested S.*); fronds erect glabrous linear-lanceolate pinnate, pinnæ deeply pinnatifid or pinnate, pinnules plane, the segments oblong-ovate acutely serrate; serratures mucronate or spinulose, involucre entire eglandulose flat somewhat permanent, scales of the stipes ovate obtuse usually (always?) with a slender point. — α . *Callipteris*; fronds linear, pinnæ only pinnatifid, superior and inferior lowest pinnules about equal, serratures scarcely spinulose. *E. B. t.* 2125 (not t. 1949). *Lastrea Presl: Newm.* p. 203. *Lophodium Callipteris Newm.* ed. 3, p. 169. *Polypodium Ehrh.* — β . *uliginosum*; fronds narrow linear-lanceolate, pinnæ of barren ones as in α ., of fertile ones more deeply divided almost pinnate at the base, superior and inferior lowest pinnules about equal, segments of the fertile ones with spinulose serratures. *Polypodium L.* (in part). *Lastrea uliginosa Newm.* in *Phyt.* *Lophodium Newm.* ed. 3.— γ . *spinosum*; fronds oblong-lanceolate bipinnate, inferior lowest pinnule much longer than the superior one, serratures spinulose. *Polypodium L.* (in part). *Asp. spinulosum Sw.?* α . *Brit. Fl.* ed. 7. *Lastrea Bab.* *L. spinosa Newm.* p. 209. *Lophodium Newm.* ed. 3, p. 157.

α . Boggy heaths, rare. Near Holt, Lynn, Norwich, and Fritton, Norfolk; Ipswich and Westleton, Suffolk; Oxton bogs and Bulwell

marshes, Notts; Madeley and Newcastle-under-Lyne, Staffordshire; Wybunbury bog, Cheshire.— β . Usually along with α .; also at Wymondham, Norfolk.— γ . Marshy places and damp woods; not uncommon in the south of England, more rare in the middle and north. Very rare in Ireland and Scotland. 4. 8.—*Rhizome* decumbent or slightly creeping. Frond without pubescence or glands. Between var. α . and γ . there is so wide a difference in general appearance, that the latter has always appeared to us to be naturally more allied to *A. dilatatum*, with which therefore in former editions we have united it; the discovery however of the var. *uliginosum* growing along with α ., and precisely intermediate between α . and γ . indicates that all the above form probably only one species. As it is however the opinion of others, who have had more opportunities of studying these when recent, that the above three are more closely linked together than any of them are with *A. dilatatum*, we have at present deferred to it, availing ourselves of the artificial distinction, chiefly to be observed in the living plant, afforded by the scales and involucre.

11. *A. dilatatum* Sw. (*broad prickly-toothed S.*); fronds drooping bi-tripinnate when young usually with stalked glands beneath, pinnules oblong distinct inciso-pinnatifid convex above or below, segments spinuloso-serrate, involucre toothed or glandular on the margin soon recurved and evanescent, scales of the stipes lanceolate much acuminate.— α . *multiflorum*; fronds usually ovate rarely linear, pinnules convex above, involucre usually ciliate with stalked glands, scales entire or fimbriate usually thicker and darker-coloured along the middle. *E. B.* t. 1461. *Lastrea Presl.* *A. spinulosum Willd.* *A. dumetorum Sm.* *Polystichum multiflorum Roth.* *Lastrea Newm.* p. 215, 222, 223. *Lophodium Newm.* ed. 3, p. 147, 153. *L. collinum Newm.* ed. 3, p. 145. *L. glandulosum Newm.* ed. 3 (fronds more glandulose beneath).— β . *recurvum*; fronds triangular-ovate, pinnules concave above, involucre with a few minute teeth or subsessile glands along the margin, scales uniform in colour usually divided into a few narrow laciniae sometimes only fimbriate. *A. spinulosum Sm.*; *E. B.* t. 1460. *A. recurvum Bree.* *Lastrea Newm.* p. 225. *Lastrea Fœnisecii Wats.* *Lophodium Newm.* ed. 3, p. 135.

Moist woods, moors, and shady and rocky places.— α . Everywhere from the sea-shore to near the summits of the highest mountains.— β . Chiefly in mountainous districts; Cornwall, Sussex, Devon, Hereford, Cumberland, &c. Ireland, very common. In Scotland principally in the West Highlands and Arran. 4. 8, 9.—We can scarcely indicate any character by which this may be known from the last except the acuminate scales. To distinguish β . from α . is still more difficult, if not quite impossible in the herbarium; in α . the involucre has sometimes only sessile glands, sometimes ciliae without glands, so that it is impossible to distinguish it at all times from that of β .; nor are the scales on the stipes to be relied on, for on both varieties these are sometimes fimbriate. The

synonyms of *A. dilatatum*, *cristatum*, and *spinulosum* are almost inextricable, on account of specimens of some other form than that described, under the impression that they were the same species, being retained for the herbarium or given away to others. *Polypodium cristatum* of Withering seems to be this species, while his *P. spinulosum* appears to be either α . or β . of *A. cristatum*.

6. CYSTÓPTERIS *Bernhardi*. Bladder-fern. (Tab. X. f. 1.)

Sori roundish, situated on the back of a vein or veinlet at the middle. *Involucre* thin and membranous, inserted by its broad cucullate base, at the under side of the *sorus* and covering it, opening by a free, generally lengthened extremity, which points towards the apex of the segment, ultimately reflexed. — Veins *pinnate and forked*; veinlets *free*, terminating a little within the margin. — Name: compounded of *κυστις*, a *bladder*, and *πτερις*, a *fern*.

1. *C. frágilis* Bernh. (*brittle B.*); fronds lanceolate bipinnate (or rarely pinnate), pinnæ ovate or ovato-lanceolate, pinnules variously toothed or lacinate or pinnatifid, the segments approximate entire or again toothed, rachis winged. *Newm.* ed. 3, p. 87. — *a. vulgaris*; fronds bipinnate, pinnæ ovato-lanceolate, pinnules slightly stalked ovate obovate or lanceolate somewhat cuneate at the base incise or pinnatifid, segments toothed, sori generally crowded at a little distance from the margin. *Newm.* p. 155, 156 (subvar. *angustata*). *Cystea Sm.* *Cyathea Sm.*: *E. B. t.* 1587. *Cystea angustata Sm.*: *E. B. S. t.* 2790. *Polypodium Rhæticum Dicks.* — β . *dentata*; fronds subbipinnate, pinnæ ovato-lanceolate, pinnules sessile ovate or oblong obtuse bluntly and unequally toothed rarely pinnatifid, sori submarginal. *Newm.* p. 154. *C. dentata Hook.* *Cyathea Sm.*: *E. B. t.* 1588. *Cystea Sm.* — γ . *Dickieana*; fronds pinnate or subbipinnate, pinnæ ovate obtuse deflexed, segments obovate or ovate obtuse crenate, pinnæ or segments crowded overlapping each other, sori submarginal. *C. Dickieana Sim.* in *Gard. Journ.* (1848) p. 308: *Newm.* ed. 3, p. 93.

Rocks and walls, in mountainous districts. — β . Cumberland. Wales. Breadalbane; Tarbet, by Loch Lomond. — γ . Sea cave, at Cove, near Aberdeen; Dunkeld. 4. 7. — The mature sporules are echinate in most (or all) of this genus; these in *var. β.* and γ . we sometimes find mixed with others, which are slightly tubercular; the echinate ones are most frequent in β . the tubercular in γ . The involucre is usually acuminate in *C. fragilis*, and roundish and lacerate in *C. alpina*; but in cultivated specimens of the latter we have seen it acuminate, while in the large form of *C. fragilis*, known to some cultivators as *C. Rhætica*, and to others as *C. angustata*, we find it rounded. In γ we have not observed an involucre even when the sori were very young. Native specimens of *var. γ.* (see Newman's

figure) present a different appearance from the other forms of this species; but when cultivated the pinnæ become deeply pinnatifid and almost pinnate, and Mr. Moore (Brit. Ferns, Nat. pr.) mentions an intermediate variety from the coast of Fife.

2. *C. *alpina* Desv. (*laciniata* B.); fronds lanceolate bipinnate, pinnules ovate-oblong deeply pinnatifid or pinnate spreading the segments rather distant obtuse broadly linear and entire or cuneate with 2-3 blunt erect teeth, rachis winged. *Aspidium* Sw.: *Cystea regia* Sm. *E. Fl.* (excl. the alpine stations): *Newm.* p. 157. *Cystopteris Presl.* *Cyathea incisa* Sm.: *E. B.* t. 163.

On an old garden wall at Low Leyton, Essex; once plentiful, but now very scarce. ♀. 6.—Certainly the *Aspidium alpinum* of Swartz.

3. *C. montana* Link (*Mountain B.*); fronds triangular short on long slender stipes tripinnate, pinnæ and pinnules spreading, ultimate pinnules narrow oblong inciso-dentate or pinnatifid, the segments toothed at the apex, rachis not winged, involucre roundish very obtuse. *Newm.* p. 159. *C. myrrhifolia* *Newm.* ed. 3, p. 97. *Aspidium montanum* Sw.

Breadalbane and Clova mountains. Ben Lawers; Meal Cuachlar; Glen Isla. ♀. 8.—Well distinguished by its triangular, very compound fronds, and long stipes.

[*Onoclea sensibilis* L., a North-American fern, has become naturalized in one spot near Warrington, and in the north of Yorkshire.]

7. ASPLÉNÍUM Linn. Spleenwort. (Tab. X. f. 2.)

Sori oblong or linear. *Involucres* of the same shape or oblong-reniform, arising from the lateral veins and opening on one side longitudinally towards the central nerve or midrib.—Veins forked in the British species.—Name: α, *νολ*, and σπλην, the spleen; the plant having been supposed to destroy the spleen, if used in excess.

* *Involucre linear or oblong, straight, entire or erose at the margin.*
Asplenium.

† *Ultimate divisions of the frond without a midvein.*

1. *A. septentrionale* Hull (*forked S.*); fronds simple and linear, or 2—3-cleft with linear-lanceolate acutely laciniate-toothed pinnæ, sori very long, involucre quite entire. *E. B.* t. 1017: *Newm.* p. 269. *Acrostichum* L. *Amesium* *Newm.* ed. 3, p. 265.

Clefts of rocks and on walls in mountainous parts. Near Oare, on the borders of Devon and Somerset; Ingleborough, Yorkshire; Kyloe Crags, Northumberland; Ambleside, Westmoreland; Cumberland, in various places. Caernarvonshire, in several places. Near Kelso and Minto Craigs, Roxburghshire; Arthur's-seat and Blackford Hill,

near Edinburgh; Stenton Rock, near Dunkeld; Pass of Ballater, Aberdeenshire. 4. 6—10.

2. *A. Germánicum* Weiss (*alternate-leaved S.*); fronds pinnate (or rarely sub-bipinnate), pinnæ alternate cuneato-lanceolate toothed at the apex, lower ones trifid and toothed, sori linear often elongate, involucre quite entire. *Newm.* p. 265. *Amesium Newm.* ed. 3, p. 258. *Asplenium alternifolium Wulf.:* *E. B.* t. 2258.

Rocks, very rare. Kyloe Crags, Northumberland; Helvellyn and Borrowdale, Cumberland. Near Llanrwst, Denbighshire; between Llanrwst and Capel Cerig, and on both sides of the Pass of Llanberis, Caernarvonshire. Rocks near Kelso, and Minto Craigs, Roxburghshire; Dunfermline, Fifeshire; Stenton Rock, near Dunkeld. 4. 6—10.—This species is found sparingly in every locality, and in each is almost always associated with *A. septentrionale*, with which it agrees in the involucre, and of which it may only be a variety; from states of the next with a less compound frond and longer pinnules than usual, it is best known by the involucre.

3. *A. Rúta-murária* L. (*Wall-Rue*, or *Tentwort*); fronds bipinnate especially below, pinnules cuneate-obovate (sometimes cuneato-lanceolate) lobed or toothed at the apex, sori linear sometimes elongate, involucre erose at the margin. *E. B.* t. 150: *Newm.* p. 261, 264. *Amesium Newm.* ed. 3, p. 253, 256.

Walls and fissures of rocks, frequent. 4. 6—10. — More compound than the three following species, but with the habit of the two preceding.

†† *Ultimate divisions of the frond, with a vein along the middle.*

4. *A. Trichómanes* L. (*Common or Maidenhair S.*); fronds pinnate, pinnæ usually roundish-oblong crenate (sometimes deeply pinnatifid and serrate) truncate or cuneate at the base, stipes and rachis all dark purple and shining. *E. B.* t. 576: *Newm.* p. 285; ed. 3, p. 249. *A. anceps Sol.:* *Hook. et Grev. Ic. Fil.* t. 195.

Rocks and walls, common. 4. 5—11. — The state of the plant with pinnatifid pinnules is figured in *Newm.* p. 287; ed. 3, p. 252.

5. *A. viride* Huds. (*green S.*); fronds pinnate, pinnæ roundish-ovate obtusely serrate cuneate at the base, stipes purple at the base only elsewhere and the rachis green. *E. B.* t. 2257: *Newm.* p. 281; ed. 3, p. 243.

Moist rocks in the mountainous districts of England, Wales, and Ireland. Frequent in the Highlands of Scotland. 4. 6—9.

6. *A. marínum* L. (*Sea S.*); fronds pinnate, pinnæ oblong obtuse inciso-serrate, the superior base rounded and sub-auriculate the inferior one truncate, rachis winged. *E. B.* t. 392: *Newm.* p. 275; ed. 3, p. 235.

In clefts and caves of rocks on the sea-coast; not unfrequent, especially in the north. 4. 6—10.

7. *A. lanceolátum* Huds. (*lanceolate S.*); fronds lanceolate bipinnate, pinnules obovate attenuate at the base deeply and sharply serrate those of the lower pinnæ somewhat lobed, sori at length confluent, principal rachis with minute hair-like scales not winged. *E. B.* t. 240: *Newm.* p. 249; ed. 3, p. 219.

Rocks, rare. Jersey. Near Tunbridge, in Kent and Sussex; Devon; Cornwall; Oxfordshire (not now found there); Somerset; Gloucestershire; Ramsay Island, Pembroke; Glamorgan; Barmouth, Merionethshire; Tremadoc, Pwllheli, and Beddgelert, Caernarvonshire; Llanrwst, Denbighshire. Kinsale, Cork. 4. 6—10.

8. *A. Adiantum-nigrum* L. (*black S.*); fronds triangular acuminate bi-tripinnate, pinnæ triangular the lower pair longer than the others, pinnules ovato-lanceolate inciso-pinnatifid toothed, principal rachis winged, sori at length confluent. —*a.* lower pinnæ deltoid subpinnate, pinnules and lobes very broad obtuse. *Newm.* p. 257 *a*; ed. 3, p. 227 (on the right). *A. obtusum Kit.* —*β.* lower pinnæ triangular acuminate pinnate, ultimate segments of pinnules somewhat ovate obtuse. *E. B.* t. 1950: *Newm.* p. 255, 257 *b, c*; ed. 3, p. 225, 227 (two upper figures). —*γ.* lower pinnæ triangular-acuminate bipinnate, ultimate segments linear very acute. *A. acutum Bory*; *Newm.* ed. 3, p. 231. *A. productum Lowe.*

Banks, walls, and fissures of rocks; common.—*γ.* Killarney, Co. Kerry; near Tralee, Cork. Jersey. 4 6—10. — *Stipes* dark purple as in the preceding species. The most common variety is our *β.*: *a.* seems to be merely a more stunted form; while *γ.* is a very luxuriant one, all its parts being drawn out by greater heat and moisture. The var. *β.* mentioned by Smith, and by some supposed to be our var. *γ.* proves, according to Mr. Moore, to be a form of *A. Filix-fœmina*.

9. *A. fontánium* Bernh. (*smooth Rock S.*); fronds linear-lanceolate bipinnate (rarely bipinnatifid), pinnules cuneate-obovate (small) with few large deep and sharp teeth, principal and partial rachis winged throughout without scales. *Aspidium Sw.*: *E. B.* t. 2024. *Athyrium Roth.* *Aspidium Halleri Willd.* *Athyrium Roth.* *Asplenium refractum Moore*?

Walls and rocks, very rare. Tooting, Surrey; Matlock, Derbyshire; Swanage Cave, Isle of Purbeck, Dorsetshire; Petersfield, Hants. Between Tan-y-Bwlch and Tremadoc, Merionethshire. 4. 6—9.—It appears that Hudson's plant, usually referred here, was *Cystopteris fragilis*. Other stations are sometimes given, but they, and indeed most of the above, require confirmation, at least as to their permanency.

** *Involucre oblong, soon curved back like a horse-shoe, laciniate-fringed.*
Athyrium.

10. *A. Filix-fœmina* Bernh. (*short-fruited S.*, or *Lady-fern*); fronds lanceolate bipinnate (sometimes only subbipinnate), pinnæ linear, pinnules lanceolate linear-oblong or ovate more or less decurrent inciso-serrate or pinnate, serratures 2—3-toothed. *Aspidium Sw.*: *E. B.* t. 1459 (not good). *Athyrium Newm.* p. 237; ed. 3, p. 207. — *α. incisum*; fronds large dark green bipinnate, pinnules oblong-lanceolate distinct deeply pinnatifid, segments of lower ones incise and toothed partial rachis very slightly margined below each pinnule. *Athyrium Roth.* *A. incisum Newm.* p. 244 *b*; ed. 3, p. 213 *b*. — *β. irriguum*; fronds smaller bright or pale green, bipinnate or subbipinnate, pinnules deeply incise or only crenate semidecurrent or decurrent and forming a wing to the rachis. *Aspidium irriguum Sm.*: *E. B.* t. 2199. *Athyrium Rhæticum Roth.* *A. convexum Newm.* p. 244 *c*; ed. 3, p. 213 *a*. *A. trifidum Roth.* *A. ovatum Roth.* *A. molle Roth.*: *Newm.* p. 244 *a*; ed. 3, p. 213 *c*. *A. latifolium Bab.*

Moist places, abundant. 4. 6, 7.—Of this species Mr. Moore gives descriptions of and names to 22 varieties besides 9 monstrosities; we cannot distinguish more than the above two, and even these appear to us only two extremes between which there are numerous gradations; usually our *α.* grows in a deep soil, not much in woods, but rather where it is exposed to the light, as among hedges, sides of ditches, and low thickets; *β.*, where the soil is scanty, in the shade, and often on wet rocks in woods; both yield fronds with flat or convex fertile pinnules, occasionally from the same root. Our *β.* is smaller and less divided, and has the pinnules often with a cuneate or ovate base; whereas in *α.* the lower segments of the pinnules, particularly on the upper side, are so much larger than the others as to give the whole a triangular or hastate appearance; in both the more flat the pinnules are, the more crowded they appear to be; all these forms appear to us to depend on a greater or less luxuriance of the plant.

8. SCOLOPÉNDRIUM Sw. Hart's-Tongue. (Tab X. f. 3.)

Sori linear, transverse, on lateral nerves. *Involucre* double, occupying both sides of the sorus, opening, as it were, by a longitudinal suture. — Veins *forked*. — Named from the lines of fructification resembling the feet of a *Scolopendra*.

1. *S. vulgare* Sym. (*common II.*); fronds simple oblong-ligulate acute heart-shaped at the base, stipes very scaly. *E. B.* t. 1150: *Newm.* p. 289, 292. *S. officinarum Sw.* *Asplenium Scolopendrium L.* *Phyllitis Newm.* ed. 3, p. 271, 275.

Shady banks and rocks, in cold and damp situations. 4. 7, 8. — Fronds from 6 inches to 2 feet long.

9. *PTÉRIS* Linn. Brake. (Tab. X. f. 4.)

Sori continuous, linear, marginal. *Involucres* formed of the *reflexed* margin of the frond, frequently dilated into a membrane, opening internally. — *Fertile* fronds *similar* to the *barren ones*. Veins *forked* in the *British species*. — Name: *πτέρις*, a fern; from *πτέρυξ*, a plume, or feather.

1. *P. aquilina* L. (common B.); fronds tripartite, branches bipinnate, pinnules linear-lanceolate superior undivided inferior pinnatifid, the segments oblong obtuse. *E. B.* t. 1679: *Newm.* p. 93, 101. *Eupteris* *Newm.* ed. 3, p. 23, 31.

Woods, heaths, and stony or sandy soils; abundant. 4. 7, 8. — *Fronds* $1\frac{1}{2}$ to 6 feet high.

10. *CRYPTOGRAMME* Br. Rock-brake. (Tab. X. f. 5.)

Sori roundish, ultimately confluent, marginal. *Involucre* formed by the revolute margins of the pinnules, which in a young state meet at the back. — *Fertile* fronds *dissimilar* to the *barren ones*. Veins *forked*. — Name: *κρυπτος*, concealed, and *γραμμη*, a line; from the concealed lines of capsules.

1. *C. crispa* Br. (curled R., or Parsley-fern); barren fronds bipinnate, pinnules bi-tripinnatifid, segments cuneate or linear-oblong, often bidentate at the extremity, fertile fronds bipinnate tripinnate below, pinnules linear-oblong rather obtuse entire narrow at the base. *Pteris* L.: *E. B.* t. 1160. *Allosorus* *Bernh.*: *Newm.* p. 103, 108; ed. 3, p. 35, 39.

Among loose stones in mountainous countries in the north: more abundant in the north-west of England than in Scotland.

11. *BLECHNUM* Linn. Hard-fern. (Tab. X. f. 6.)

Sori linear, longitudinal, contiguous, parallel, one on each side of the rib or midvein. *Involucre* continuous, opening on the side next the midvein. — *Fertile* fronds *usually dissimilar* to the *barren ones* in the *British species*. Veins *forked*. — Name: *βληχνον*, or *βληχρον*, a fern.

1. *B. boreale* Sw. (Northern H.); barren fronds pectinately pinnatifid, the segments lanceolate somewhat obtuse, central fertile fronds pinnate, pinnæ linear acuminate, with the margin recurved. *E. B.* t. 1159. *B. Spicant* Roth: *Newm.* ed. 3, p. 18, 21. *Lomaria* *Desv.*: *Newm.* p. 90, 92.

Woods and heaths, abundant; especially in a poor light soil. 4. 7, 8. — In spring several pinnate fertile fronds arise from the centre of a tuft of barren ones, and these two kinds are very dissimilar. But during summer some of the outer flat fronds are occasionally found fertile; in these the involucre is easily seen to be by no means marginal, as in *Lomaria*, to which this species is more allied in general appearance than to *Blechnum*.

12. *ADIANTUM* Linn. Maiden-hair. (Tab. X. f. 7.)

Sori oblong or roundish, marginal. *Involucres* formed each of a separate reflexed portion of the margin of the frond, opening on the inner side, bearing the capsules on a vein continued from the frond.—Veins *forked in the British species*.—Name: ἀδίαυτος, that which is of a *dry nature*.

1. *A. Capillus-Veneris* L. (*true M.*); frond bipinnate, pinnules thin broadly obovate cuneate towards the base inciso-sublobate, segments of the fertile pinnules terminated by a linear-oblong sorus, sterile ones serrate. *E. B. t.* 1564: *Newm.* p. 83; ed. 3, p. 1.

Moist rocks and walls, especially near the sea, rare. Jersey. Ilfracombe, Watermouth, Brixham, and Mewstone bay, Devon; Carclew, Penzance, and various places between St. Ives and Hayle, Cornwall; Cheddar Cliffs, Somerset. Barry Island, Porthkerry, Aberthaw, and Dunraven, Glamorganshire. Isle of Man. South Isles of Arran, and near Roundstone, Galway; near Tralce, Kerry; Ballyvaughan, Clare: Ireland. 4. 5—9.—A most delicate and graceful fern, very abundant in the south of Europe.

B. Capsules opening irregularly, placed on a receptacle at the margin of the frond and terminating a vein; the ring transverse, complete. Cellular tissue lax. HYMENOPHYLLÆ. (Gen. 12, 13.)

13. *TRICHÓMANES* Linn. Bristle-fern. (Tab. X. f. 8.)

Sori marginal. *Capsules* upon a long filiform *receptacle*, within a cylindrical, or suburceolate, monophyllous *involucre*, which is of the same texture as the frond, opening vertically.—Veins *forked*.—Name: τριχομανεις (from θριξ, τριχος, *hair*, and μανος, *sparse*), applied formerly to the *Asplenium Trichomanes* of Linnæus, supposed to have the property of restoring the hair where thin, and now to the present genus, which has numerous slender stems and hair-like receptacles.

1. *T. radicans* Sw. (*rooting B.*); fronds 3-4-pinnatifid glabrous, segments linear entire or bifid obtuse, involucres solitary in the axils of the upper segments margined cylindrical, the mouth scarcely 2-lipped shorter than the protruded receptacle.—*a. Swartzii*; fronds triangular, involucres scarcely winged. *Newm.* ed. 3, p. 283. *T. brevisetum* Br. *T. speciosum* Willd.: *Newm.* p. 305. *Hymenophyllum alatum* Sm.: *E. B. t.* 1417. *H. Tunbridgensis* β. Sm. *Fl. Br.*—β. *Andrewsii*; fronds lanceolate, sori copious, receptacles longer, involucres winged. *Newm.* p. 315; ed. 3, p. 292.

Wet rocks in mountainous countries, rare. Formerly abundant at Bellbank, near Bingley, Yorkshire; not now found there. Hermitage Glen and Powerscourt, Co. Wicklow; near Youghal, Cork, Bantry, and in other places in Co. Cork; Turk Waterfall, Cro-

maglaun mountain, Mount Eagle near Dingle, Iveragh, &c., Co. Kerry.—β. Glouin Caragh, Iveragh, Co. Kerry: *W. Andrews, Esq.* 4. 6—9.—This rare and beautiful fern, together with the species of the following genus, have a habit very different from the rest of our ferns, and belong to a group which abounds in the tropics. Their *fronds* are membranous and elegantly reticulated; their depressed sessile *capsules* have a jointed *ring* which completely surrounds them transversely, and they are attached to the *receptacle* at a distance from the ring.

14. HYMENOPHYLLUM Sm. Filmy-fern. (Tab. XI. f. 1.)

Sori marginal. *Capsules* upon a narrow receptacle, within a 2-valved *involucre* which is of the same texture as the frond, opening vertically.—Veins *forked*.—Named from ὑμην, ὑμενος, a *membrane*, and φύλλον, a *leaf*; an admirably characteristic appellation.

1. *H. Tunbridgense* Sm. (*Tunbridge F.*); fronds tender pinnate, pinnæ distichous vertical pinnatifid, the segments linear undivided or bifid and as well as the axillary solitary suborbicular compressed involucre spinuloso-serrate, rachis strongly winged. *E. B. t.* 162: *Newm.* p. 321; ed. 3, p. 297.

Moist rocks among moss, in mountainous countries. First found at Tunbridge. Abundant in the north-west of England and in Wales, and many parts of Ireland. Banks of the Clyde; Luss by Loch Lomond; Arran; Drumlanrig, Dumfriesshire. 4. 6, 7.—Habit tender and delicate. *Pinnæ* pointing in two opposite directions, flat and vertical, on the same plane with the winged *rachis*. *Involucres* slightly swollen at the base, the rest compressed, especially at the margin of the valves.

2. *H. Wilsóni* Hook. (*Scottish F.*); fronds rigid pinnate, pinnæ recurved subunilateral wedge-shaped and 4—6-lobed, the segments linear undivided or bifid spinuloso-serrate, involucres axillary solitary ovate inflated entire, rachis only slightly margined towards the extremity. *E. B. S. t.* 2686: *Newm.* p. 325. *H. unilaterale* Willd.? : *Newm.* ed. 3, p. 301.

Wet rocks. Devon, Cornwall, and north of England; rare. Wales. Abundant in the Highlands, especially in the west of Scotland, and in many parts of Ireland. 4. 6, 7.—More rigid, and with larger reticulations than the last; distinct in its mode of growth, for all the *pinnæ* are strongly curved backwards, in a direction contrary to that of the fructification; the *involucre* is larger, of a more rigid texture, truly ovate, each valve remarkably convex for its whole length, the edges only of the valves being applied to each other, and they are quite entire.

ORD. CIX. OSMUNDACEÆ R. Br. (Tab. XI. f. 2.)

Capsules clustered on the margin of a transformed frond, with an obscure ring, reticulate and pellucid, opening by two regular valves. *Fronds* circinnate in veneration.

1. OSMÚNDA *Linn.* Osmund. (Tab. XI. f. 2.)

Capsules subglobose, pedicellate, clustered, striate, half 2-valved. *Involucre* none.—Veins *forked*.—Name: probably given, as Sir J. E. Smith suggests, in honour of some person. *Osmund*, in Saxon, signifies *domestic peace*; from *hus*, a house, and *mund*, peace. Linnæus derives it from *osmundare*, to wash the mouth; but why is not obvious.

1. *O. regális* L. (*royal O.*, or *Flowering-fern*); fronds bipinnate, pinnules oblong nearly entire the lower base somewhat auricled, the inferior ones opposite, fertile panicle bipinnate occupying the extremity of the frond. *E. B.* t. 209: *Newm.* p. 331; ed. 3, p. 307.

Boggy places, and wet margins of woods. Very frequent in the W. of Scotland, and S. of Ireland. 4. 6—8.—The noblest and most striking of our ferns. *Fronds* usually 2—3 ft., but occasionally 10 or 12 ft. high.

ORD. CX. OPHIOGLOSSACEÆ *R. Br.* (Tab. XI. f. 3, 4.)

Capsules arranged on the margin of a contracted and separate branch of the frond, sessile, without reticulation or a ring, coriaceous, opaque. *Fronds* straight in veneration.

1. OPHIOGLOSSUM. Capsules connate on a 1-celled 2-ranked spike.
2. BOTRYCHIUM. Capsules arranged on one side of a pinnate rachis.

1. OPHIOGLÓSSUM *Linn.* Adder's-tongue. (Tab. XI. f. 4.)

Capsules 1-celled, 2-valved, opening transversely, connate, forming a compact simple 2-ranked spike. *Involucre* none.—Veins *reticulate*.—Name: *οφις*, a serpent, and *γλωσσα*, a tongue; which the spike of fructification somewhat resembles.

1. *O. vulgátum* L. (*common A.*).—*α. ovatum*; barren branch of the frond ovate obtuse. *E. B.* t. 108: *Newm.* p. 349; ed. 3, p. 325.—*β. Lusitanicum*; small, barren branch of the frond linear-lanceolate or oblong. *O. Lusitanicum* L.: *Hook. et Grev. Ic. Fil.* t. 80: *Newm.* ed. 3, p. 331.

Moist pastures and in woods.—*β.* Summit of rocks near Petit Bot bay, on the south coast of Guernsey: *Mr. G. Wolsey.* 4. 5, 6.—There are all intermediate gradations, from the largest and broadest cordate or ovate barren fronds to a narrow linear-lanceolate form not half an inch long; indeed, in the Botany of the Antarctic Voyage, Part II., Flora of New Zealand, vol. ii. p. 49, Dr. Hooker has reduced all the supposed species of this genus to one.

2. BOTRYCHUM Sw. Moon-wort. (Tab. XI. f. 3.)

Capsules subglobose, sessile, clustered at the margin and on one side of a pinnate rachis, 1-celled, 2-valved, compressed, opening transversely. *Involucre* 0. — Veins *forked*. — Name: *βοτρυς*, a bunch of grapes; from the appearance of the branched clusters of capsules.

1. *B. Lunaria* Sw. (common *M.*); barren branch of the frond usually solitary linear pinnate, pinnæ usually lunate or subflabelliform crenate or toothed with radiating veins. *Newm.* p. 337; ed. 3, p. 313. *Osmunda* L.: *E. B.* t. 318.

Dry mountain pastures and downs or links by the sea. 4. 6—8. — Specimens of this are occasionally found with more than one barren branch to the frond.

[2. *B. rutaceum* Sw. (*rue-leaved M.*); barren branch of the frond solitary deltoid subpinnate, pinnæ few (3—4 pairs), linear or cuneate incise or pinnatifid with a midvein. *Newm.* ed. 3. p. 322, 324. *B. Lunaria* ♂. *Sm.*: *Newm.* p. 348.

Mountain pastures and links near the sea. Westmoreland (*Ray*). Sands of Barrie: *Mr. Cruickshank*. 4. 8. — We have not ourselves seen British specimens; *B. simplex* Hitchc. (*Hook. et Grev. Ic. Fil.* t. 82) appears to be the same species. It is probable that Smith was correct in referring it to *B. Lunaria*, none of the varieties he mentions being “so *numerously* distinct as to have the appearance of a different species”: an observation that applies well to this one, only three specimens having been found on the Sands of Barrie, and none elsewhere since the days of Ray.]

ORD. CXI. LYCOPODIACEÆ Sw. (Tab. XII. f. 1, 2.)

Capsules sessile in the axils of leaves or bracteas, or lodged within a cavity in their base, without a ring, 2—3-valved or indehiscent. *Involucre* 0 (unless a cavity in the base of the leaves). *Sporules* or *seeds* sometimes of two kinds, which are then contained in different capsules. *Leaves* and bracteas cauline, rarely all radical and then arising from a cormus (solid bulb). *Vernation* straight (not circinate).

1. LYCOPodium. Stems leafy. Capsules 1-celled, 2-3-valved, free from the leaves or bracteas. Terrestrial plants.
2. ISOETES. Leaves all radical. Capsules indehiscent, seated in a cavity at the base of the leaves. Aquatics.

1. LYCOPodium Linn. Club-moss. (Tab. XII. f. 1.)

Stems leafy. *Capsules* 1-celled, 2-valved, containing numerous minute powdery granules (f. 1, c, d, e); sometimes with others that are 3-valved, containing a few large smooth seeds

or sporules (f. 1, *f*, *g*, *h*).—Named from *λυκος*, a *wolf*, and *ποδιον* dim. of *πους*, a *foot*; which the branches of some species were supposed to resemble.

1. *L. clavatum* L. (*common C.*); spikes in pairs cylindrical stalked, their bracteas scale-like acuminate eroso-dentate, stem (long) creeping, branches ascending, leaves scattered incurved hair-pointed. *E. B.* t. 224: *Newm.* p. 353.

Heathy pastures, especially in mountainous countries. *¶.* 7, 8.—
Stems many feet long.

2. *L. annótinum* L. (*interrupted C.*); spikes oblong-cylindrical solitary sessile terminal, stem (long) creeping, branches ascending dichotomous, branchlets simple, leaves in about 5 rows linear-lanceolate mucronate serrulate patent. *E. B.* t. 1727: *Newm.* p. 361.

Stony mountains of North Wales, Cumberland, and the Highlands of Scotland. Not unfrequent on the Cairngorm range. *¶.* 6—8.

3. *L. inundatum* L. (*Marsh C.*); spikes terminal sessile leafy solitary, stem (short) creeping, branches simple few, leaves linear scattered acute curved upwards. *E. B.* t. 239: *Newm.* p. 369.

Moist heathy places, but not very common. *¶.* 6—8.

4. *L. Selaginoides* L. (*lesser alpine C.*); spikes terminal solitary sessile, stem creeping, branches few ascending simple, leaves scattered lanceolate subpatent ciliato-denticulate. *E. B.* t. 1148: *Newm.* p. 371. *Selaginella spinosa Beauv.*

Boggy and springy spots, by the sides of mountains in the north of England and Wales; not unfrequent in Scotland and Ireland. Sandy coast of Lancashire and Anglesea. *¶.* 8.—This is the only British species which has capsules and sporules of two kinds.

5. *L. alpinum* L. (*Savin-leaved C.*); spikes terminal solitary sessile short cylindrical, stem (long) prostrate, branches dichotomous and fascicled, leaves in 4 rows oblong keeled acute adpressed. *E. B.* t. 234: *Newm.* p. 365.

On the more elevated mountains of the north, frequent. *¶.* 8.

6. *L. Selágo* L. (*Fir C.*); capsules in the axils of the common leaves (not spiked), stem dichotomously branched erect fastigiate, leaves crowded uniform in about 8 rows linear-lanceolate acuminate entire imbricate rigid. *E. B.* t. 233: *Newm.* p. 375.

Heathy and stony soils, more abundant in mountainous countries. *¶.* 6—8.

2. ISÓETES Linn. Quill-wort. (Tab. XII. f. 2.)

Leaves all radical, arising from a cormus (solid bulb). *Cap-*

sules indehiscent, lodged each within a cavity in the dilated base of the leaves; those at the base of the outer leaves containing a few large sporules or seeds which are rough with minute (f. 2, g) points; those at the base of the inner ones having numerous minute granules (f. 2, e, f); in both the granules are inserted on radiating slender receptacles.—*Aquatics*.—Named from *ισος*, equal or alike, and *ετος*, the year; or ever-green.

1. *I. lacústris* L. (*European Q.*); leaves subulate bluntly 4-angular with 4 longitudinal internally jointed tubes. *E. B.* t. 1084: *Newm.* p. 381, 386.

Bottoms of lakes in mountain districts in the north of England, Wales, Ireland, and Scotland. 2. 5—7.—There is probably only one species of the genus, although very variable in the length of the leaves, and in the plants being solitary or in tufts. *Leaves* cellular. *Cormus* about as large as a hazel-nut, and eaten by water-fowl. Although an aquatic like the *Marsileaceæ*, the fruit is more that of *Lycopodium*. Dr. Lindley, in his *Veget. Kingdom*, characterizes his *Lycopodiaceæ* so as to include it, but nominally arranges it with *Marsileaceæ*.

ORD. CXII. MARSILEACEÆ *R. Br.* (Tab. XII. f. 3.)

Involucres distinct from the leaves, situated near the root of the plant, coriaceous; each usually with several cells, containing capsules of two kinds. *Capsules* indehiscent without a ring. *Stems* creeping or floating. *Vernation* circinate or involute.—*Aquatics*.

1. *PILULÁRIA* Linn. Pill-wort. (Tab. XII. f. 3.)

Involucres solitary, nearly sessile, globose, coriaceous, 4-celled; each *cell* containing 2 different kinds of bodies, one a membrane or *capsule* containing many minute granules (f. 3, g); the other a 1-seeded *capsule* (or solitary large granule) (f. 3, h).—Name: *pilula*, a little pill; which its fructification resembles.

1. *P. globulífera* L. (*creeping P.*, or *Pepper-grass*): *E. B.* t. 521: *Newm.* p. 393.

Margins of lakes and ponds, and in places that are partially overflowed. 2. 6—8.—*Stems* creeping, long, and entangled. *Leaves* setaceous, erect, 2 or 3 from one point, 4—5 inches long, circinate in vernation. *Involucres* at the base of the *leaves*, about the size of small peas, brown, downy on the outside.

ORD. CXIII. EQUISETACEÆ *De Cand.* (Tab. XII. f. 4.)

Fructification terminal in *spikes* or *catkins*, consisting of pel-tate polygonous scales, on the under side of which are from 4—7

involucres, which open longitudinally and contain numerous globose bodies enfolded by 4 filaments clavate at their extremities.

1. *EQUISETUM* Linn. Horse-tail. (Tab. XII. f. 4.)

Character of the Genus the same as that of the Order. — Named from *equus*, a horse, and *seta*, a hair, or bristle; whence the English name *horse-tail*.

* *Fertile stems unbranched*¹, succulent, appearing before the barren ones, which have whorled branches.

1. *E. Telmatéia* Ehrh. (*great-water H.*); barren stems nearly smooth with very numerous (about 30) striæ and nearly erect simple branches, sheaths of the branches with 4 close small subulate 2-ribbed teeth, fertile stems (short) clothed with ample loose sheaths. *Newm.* p. 67, 76. *E. fluviatile Sm.: E. B. t.* 2022.

Wet damp ground, sides of ditches, clay banks, and swampy bogs, frequent. 2. 4. — The largest of all our species, its *barren stems* or *fronds* being 3—4 feet high.

2. *E. umbrósum* Willd. (*blunt-topped H.*); sterile frond very obtuse at the extremity its stem especially upwards scabrous with prominent points and about 20 striæ, branches simple slender patent, the teeth of the sheaths 3—4 short acute with one rib disappearing before the apex, fertile stem with approximate sheaths. *Newm.* p. 63. *E. Drummondii Hook.: F. B. S. t.* 2777.

Wet places, rare. Mere Clough, near Manchester; Yorkshire; Northumberland; Westmoreland. Aberdeenshire; near Forfar, and banks of the Isla and Esk, in Forfarshire, extending up the valleys to their sources; by the Caledonian Canal; Falls of Moness; Ochills; Campsie Glen; Bonnington woods, Lanarkshire; Woodcock Dale, Linlithgowshire. Near Belfast. 2. 4. — Allied to the following species. Its colour is greener and less glaucous; its *stems* rougher, with closely set raised points; its angles and *branches* much more numerous, and the whole *barren frond* is singularly blunt (in its outline) at the extremity. In general appearance the barren plant resembles *E. sylvaticum*, from which it is at once distinguished by the simple, not compound branches. Mr. Benthham considers this to be *E. pratense* Ehrh., but that species is said by Ehrhart to differ from *E. arvense* by the fertile stem being branched; and if the same as *E. umbrósum* it must be in an abnormal condition, but most probably it belongs to a species of the next section; it was quite unknown to Willdenow except by description.

¹ In most of the species of this section the fertile stems occasionally produce whorled branches, the catkins and branches appearing at the same time: so that this sectional character must not be taken in an absolute sense, but will indicate the usual or normal condition of the fronds.

3. *E. arvénse* L. (*corn H.*); frond attenuate upwards, barren stem slightly scabrous with 12-14 furrows, branches simple erecto-patent, teeth of their sheaths 3—4 lanceolato-subulate 1-ribbed to the apex, fertile stem with its sheaths remote loose. *E. B. t.* 2020: *Newm.* p. 77.

Corn-fields and road-sides, frequent. 24. 4. — The *sheaths* of the *fertile fronds* have the nerves of the teeth deeply furrowed, so as to resemble two nerves.

** *Fertile stems similar to the barren ones, simple or branched.*

4. *E. sylvaticum* L. (*branched Wood H.*); barren and fertile stems with about 12 furrows, sheaths lax with about 3 or 4 long membranous obtuse teeth, branches compound whorled deflexed their sheaths with 3 subulate long teeth each 1-ribbed to the apex, catkin terminal obtuse. *E. B. t.* 1874: *Newm.* p. 59.

Moist woods, hedge-banks; abundant in the north. 24. 4, 5. — A graceful species, less rigid and more herbaceous than any of the following. *Stems* annual. *Sterile plants* pyramidal in their outline; *fertile ones* abrupt at the top, especially after the fructification has passed away.

5. *E. limosum* L. (*smooth naked H.*); stems nearly smooth striate, striæ about 16—18, teeth of the sheaths short rigid distinct, branches nearly erect simple whorled often abortive, catkin terminal upon the stem. *E. B. t.* 929. *E. fluviatile Newm.* p. 51. — *α.* stems quite smooth, branches short and rigid nearly equal throughout as long as the internodes, spike nearly sessile. *E. limosum Fries.* — *β.* stem somewhat scabrous above, branches long slender tapering to the point longer than the internodes, spike stalked. *E. fluviatile Linn.: Fries.*

Lakes, sides of rivers and pools; frequent. 24. 6, 7. — *Stems* annual. Next in size to our *E. Telmateia*, but very different; it has fewer angles and teeth and fewer branches in a whorl, and these latter are often short and imperfect, or wanting; differing, too, by the *catkins* being upon stems that are similar to the barren ones. Mr. Baker, in *Phytol.* iv., p. 1118, describes and figures a double row of tubes in the substance of the tubes of the stems in var. *α.*; one row in *β.* Mr. Newman (*Br. Ferns*, ed. 2, p. 7) appears to be of opinion that the *E. limosum* Linn. prefers boggy or muddy localities to actual water, and never under any circumstances becomes branched. If this view be correct, our var. *α.* ought to be limited to the perfectly simple forms, while the others would be conjoined with our *β.*: but we find both growing intermingled and otherwise undistinguishable by the eye.

6. *E. palustre* L. (*Marsh H.*); stems deeply 4—8-furrowed, teeth of the sheaths wedge-shaped acute brown at the point and membranous at the margin, branches simple whorled gradually shorter upwards (sometimes abortive), catkin terminal obtuse. — *α. vulgare*; stem with 6—8 furrows, branches

barren, catkin terminal on the stem. *E. B.* t. 2021 : *Newm.* p. 43.— β . *alpinum*; much smaller, with 4—5 angles and teeth to the sheaths, upper branches abortive, catkin terminal on the stem. *Newm.* p. 49.— γ . *polystachion*; branches terminating in catkins. *Willd.* : *Newm.* p. 47 : *Ray's Syn.* t. 5, f. 3.

Boggy soils, frequent.— β . and γ . not so common. 4. 6, 7.—*Stems* annual.

7. *E. trachýdon* A. Braun (*long-stemmed II.*) ; stems branched at the base, branches long flexuose simple or again irregularly branched towards the apex very scabrous furrowed, sheaths ultimately wholly black with 6—13 narrow somewhat persistent subulate teeth, catkins terminal mucronate. *E. Mackayi Newm.* p. 25 : *Brit. Fl.* ed. 6 and 7.

Mountain glens near Belfast, and elsewhere in the north of Ireland. Bed of the river Dee, in the parish of Banchory ; Den of Airly ; Scotland. 4. 7.—*Stems* perennial. Nearly as rough as the following, but the ramification and the teeth of the sheaths are different ; *sheaths* close. We refer this species to *E. trachýdon* of Braun on the authority of Mr. Babington, but we have seen no authentic specimens.

8. *E. hyemále* L. (*rough II.*, or *Dutch Rushes*) ; stems throwing up simple branches only from the base very scabrous furrowed, sheaths black at the bottom and top otherwise whitish with 12—18 black membranous bristle-pointed teeth, the bristle deciduous, catkin terminal mucronate or conical at the point.—*a. perenne* ; stems perennial, sheaths close, teeth obtuse. deciduous bristle black. *E. B.* t. 915 : *Newm.* p. 17.— β .? *Moorei* ; stems annual, sheaths loose, teeth truncate, deciduous bristle white. *E. Moorei Newm.* in *Phyt.* v. p. 19.

Boggy woods, principally in the middle and north of England. Also in Scotland and Ireland.— β . Clay banks facing the sea at Rockfield, Co. Wicklow. 4. 7, 8.—The circumstance of the stems dying down every autumn, in place of remaining over the winter, and the loose sheaths, do not appear of sufficient importance to distinguish β . as a species : but we have seen no specimens.

9. *E. variegátum* Schleich. (*variegated rough II.*) ; stems filiform rough branched only at the base with 4—10 furrows, sheaths green below black above with white or black-edged membranous obtuse somewhat bristle-pointed teeth, catkin terminal mucronate. *Newm.* p. 31.—*a.* stems decumbent slender 6—8 inches long, teeth of the sheaths cuneate. *E. B.* t. 1987. *E. arenarium Newm.*— β . erect stouter 12 to 20 inches high, teeth of the sheaths ovate obtuse. *E. variegatum Web. et Mohr.*— γ . erect very tall 2—3 feet high and more smooth, teeth of sheaths short obtuse. *E. Wilsoni Newm.* p. 39.

a. Sandy sea-shores. New Brighton, Cheshire ; Bootle, and Southport, Lancashire. Portmarnock sands. Sands of Barrie.— β . on

the wet banks of canals, rivers, and ditches in Yorkshire, Durham, Northumberland and Cumberland in various places. Banks of the Dee, Kincardineshire.— γ . in water. Muckruss; Dublin canal; Mullingar, Co. Westmeath. Banks of the Dec, with β . 2. 7, 8.—*Stems* perennial. The above varieties seem to depend on locality. It is very doubtful if the colour of the sheaths or the number of their teeth afford sufficient distinguishing characters, so that Mr. Newman was probably correct when he gave his opinion that all of the group with simple or irregularly branched stems formed only one species.

SUB-CLASS II. CELLULARES. (ORD. CXIV.—CXIX.)

Fructification very various.—Plants *truly cellular, without tubular vessels.*

114. MUSCI. Sporules contained in thecæ closed by an operculum or lid which falls off, or is rarely adnate. Stem with leafy appendages.
 - a. *Bryaceæ*. Capsule without valves.
 - b. *Andræaceæ*. Capsule opening at the side by 4 valves.
115. HEPATICÆ. Sporules contained in thecæ, which are destitute of an operculum. Plants usually with leafy appendages.
 - a. *Jungermanniaceæ*. Capsules opening by a definite number of equal valves, furnished internally with spiral filaments or elateres.
 - b. *Marchantiaceæ*. Capsules without valves, or bursting irregularly, with elateres.
 - c. *Ricciaceæ*. Capsules with neither valves nor elateres.
116. LICHENES. Plants not growing in water, without leafy appendages. Sporules lying in superficial disks.
117. FUNGI. Plants when perfect not growing in water, and without leafy appendages. Sporules in the substance of the plant, the whole of which may be viewed as organs of reproduction.
118. CHARACEÆ. Tubular symmetrically branched plants, without leafy appendages, growing in water, furnished with spiral-coated nucules filled with starch.
119. ALGÆ. Plants without leafy appendages, and with very few exceptions found in water. Branches when present unsymmetrical. Sporules often of two kinds, variously disposed; spiral-coated nucules none.
 - a. *Fucaceæ*. Vesicular, cellular, filamentary, membranous, or tubular plants, not covered by silex.
 - b. *Diatomaceæ*. One-celled very minute plants, furnished when perfect with a siliceous coat, multiplying by each cell dividing into two, and then either separating or cohering in threads. Endochrome brown.

The genera and species of these orders have been described in the 5th volume of "*English Flora*," or the 2nd volume of the 2nd and 3rd editions of the present work.

ADDITIONS AND CORRECTIONS.

Page Line

- 1. 14. *For* XXIII. *read* XXII.
- 4. 11 from bottom. After *common T.* insert , *Virgin's Bower*, or *Old Man's Beard*
- 6. 3. After *Wood A.* insert , or *Wind-flower*
- 9. 8 from bottom. *For* ♀. *read* ☉.
- 12. 30. After *stinking H.* insert , *Setter-wort*, or *Bear's-foot*
- 13. 18. *For* ♀. *read* ☉.
- 17. 17. After *red P.* insert , or *Corn-rose*
- 18. 10. *For* ☉. *read* ☉ or ♂.
- 19. 20. *For* globose obtuse, *read* subglobose or obovate obtuse or truncate,

13 from bottom. *Add* :—We did not receive our copy of Vol. IV. No. 16 of the Journal of the Proceedings of the Linn. Society, until after this sheet was printed. We there find, at p. 157, that Mr. Babington proposes to follow M. Jordan and some other continental writers in separating this species into five. These are all included under our *Fumaria capreolata*, but may be distinguished as varieties as follows:—*a.* fruit obtuse, longer than broad, contracted near the base and there narrower than the summit of the recurved or spreading pedicels. *F. pallidiflora Jord.*—*β.* fruit truncate, broader than long, contracted into a stalk-like base, and there scarcely so broad as the summit of the spreading pedicel. *F. Borrei Jord.*—*γ.* fruit very obtuse, its base conspicuously broader than the summit of the spreading pedicel. *F. confusa Jord.* *F. agraria Mitt.*—*δ.* fruit obovate very obtuse, its base broadly obconical, a little narrower than the summit of the erecto-patent pedicel. *F. muralis Sond.*—[*ε.* fruit obovate obtuse longer than broad, its base obconical and as broad as the pedicel, pedicels reflexed in flower and fruit. *F. capreolata L.* *F. speciosa Jord.*]—This last has not occurred in Britain. The points of distinction between the above, even although constant, do not appear of specific importance, or to imply any organic difference.

Page Line

20. 1. After &c. insert ☉. 6—9.
 22. 7. For 23 read 24.
 24. For 24 read 23.
 25. 23. After Partick, insert Glen Devon; and for ☉ read ☉
 or ♂ (Link).
 3 from bottom. For DC. read Lam.
 26. 15 from bottom. For Coral-root read Coral-wort.
 27. 11. After common *B.* insert, *Ladies' Smock*, or *Cuckoo-flower*
 12 from bottom. For Linn. read Link.
 37. 13 from bottom. After broad-leaved *P.* insert, or *Dit-*
tander
 41. 2 from bottom. For glabrous read glabrous or hispid with
 reflexed hairs
 46. 15. After *Cistus* insert *polifolius*
 47. 3 from bottom. After this line insert:
 , † *Stigma* more or less deflexed, not capitate.
 49. 16. After *Pansy V.* insert, *Love-in-idleness*,
 50. 7 from bottom. After 868. add *D. intermedia Hayne*.
 61. 10 from bottom. For 2300 read 3200
 68. 10. Add:—In his *Flora* of Cambridgeshire, p. 304, Mr.
 Babington has lately described, as British, *A. leptoc-*
clados Guss.; this is allowed by most botanists to be
 merely a more slender and small-flowered variety of
A. serpyllifolia.
 29. After 538. add *Stellaria Scop.*
 71. 9 from bottom. Add:—In the *Ann. and Mag. Nat. Hist.*
ser. 3rd, iii. p. 20, Mr. Babington endeavours to show
 that *Cerastium pumilum* is distinct from both *C*
viscosum and *C. semidecandrum*: what he has in view
 appears to be a form of the latter, but we have not
 seen his specimens.
 74. 1 from bottom. After *purging F.* insert, or *Mill-moun-*
tain.
 75. 11. After *Thyme-leaved F.* insert, or *All-seed*
 79. 13 from bottom. After *Tutsan* insert, or *Park-leaves*
 10 from bottom. After 164. add *Androsæmum officinale*
All.: Reich. Fl. Germ. vi. p. 70, t. 352, f. 5192.
 3 from bottom. Delete from this to line 26 in next page,
 and insert:

3. *H. *elatum* Ait. (*large-flowered Tutsan*); styles
 nearly straight about as long as the stamens and
 petals and twice the length of the calyx, capsule
 when ripe 3-valved at the apex nearly dry, stem
 shrubby 2-edged above, sepals unequal oval sub-
 acute reflexed after flowering persistent, leaves
 ovate sessile. *Androsæmum parviflorum Spach.*
A. grandifolium Reich. Fl. Germ. vi. p. 70, t. 352,

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f. 5193. *H. Anglicum Bertol.* *H. Androsæ-*
num Sm. in *E.B.* t. 1225.

Hedges and shrubby places in sheltered situations near the sea, in the south-west of England, west of Scotland, and Ireland. Cliff above Falmouth harbour; Helston near Falmouth. Hills behind Greenock; Crinan Canal, Argyleshire; Culross, Perthshire; Arran; Scotland. Galway; Donard Lodge, Co. Down; Ireland. *h.* 8, 9. — Scarcely naturalized in any of these localities. In favourable situations the lower part of the stem is quite woody, and sometimes two inches thick; it is more tender than *H. hircinum*, and is probably a native of the Azores. Its large beautiful glossy foliage and copious lemon-yellow blossoms make it deserving of a place in our green-houses; it is so easily injured by frost that it has now almost disappeared from botanical gardens. The peduncles are never 2-winged on recent specimens, although they sometimes appear so after being dried. The figure in *E.B.* represents the sepals too acute, and the stamens too few and only in three bundles. *H. grandifolium* of Choisy is perhaps different. The allied *H. hircinum* L. is now naturalized in some places in the south and west of Ireland.

- 80. 13 from bottom. *For h. read 4*
- 81. 8. After *St. J.* insert , or *St. Peter's-wort*
- 92. 24. After *common S.* insert , or *Prickwood*
- 93. 25. After *Alder B.* insert , or *Black-alder*
- 96. 24. After *Dyer's G.* insert , or *Wood-waxen*
- 108. 10 from bottom After *sweet M.* insert , or *Wild Liquorice*
- 115 18. *After this line add:*

4^a. *L. * tuberósus* L. (*Earthnut Pea*); peduncles 3—6-flowered longer than the leaflets, legumes compressed with longitudinal elongate reticulations, seeds smooth, tendrils with 2 oblong-elliptical mucronulate leaflets, stipules semisagittate narrow acuminate, calyx-teeth triangular acuminate, lower ones as long as the tube, upper ones slightly shorter, stem diffuse acutely 4-angled without wings. *Curt. Bot. Mag.* t. 111.

Borders of fields. Fyfield near Ongar, Essex, extending at intervals for several miles. *4.* 6—8. We understand that there is a specimen in Petiver's herbarium, from near Lincoln, where it may have been cultivated. For our information about the Essex plant, and specimens, we are indebted to Mr. G. S. Gibson, of Saffron-Walden; it has been observed by an old farmer growing in the same fields for

Page Line

60 years. As the flowers fall off without bearing fruit, doubts may well be entertained about its being indigenous, or even fully naturalized; in the middle and south of Europe, however, where it is a native, it seeds freely; and our character of the fruit has been obtained from foreign specimens. The plant creeps much under ground, giving rise to many *stems* above and *tubers* below, so that it is not readily extirpated. The *keel* and *style* are curved (not bent at an angle). Formerly it was much cultivated in Holland (and probably also in some parts of England) for the sake of the esculent tubers, about the size of a walnut, which were sold in the market under the name of *Macusson*.

116. 23. For *macrorrhizus* read *macrorrhizus*
 119. 15. After *Sloe* insert or *Blackthorn*
 120. 13 from bottom. After *Meadow-sweet* insert , or *Queen of the Meadow*
 121. 24. After *common A.* insert , or *Herb-Bennet*
 125. 10. For we do see read we do not see
 128. 17.—Mr. Babington in his *Flora of Cambridgeshire*, p. 305, has now withdrawn *R. nemorosus* and substituted for it:—*R. althæifolius* Host, with basal leaflets not incumbent and prickles from a compressed base: and *R. tuberculatus* Bab., with basal leaflets incumbent and prickles from a tubercular base: both have the leaves 3—5-nate, and sepals ovate and more or less acuminate.
135. 2 For 9, 7. read 6, 7.
 136. 4. For *pimpinollifolia* read *pimpinellifolia*
 137. 20. For *set.* read *setæ*.
 138. 6. After *true S.* insert , or *Eglantine*
 141. 18. After *Mountain-ash* insert , *Quicken-tree*,
 155. 8. Add: *Navelwort*.
 156. 4 from bottom. After *white S.* insert , or *Prickmadam*
 157. 18 from bottom. For *Yorkshire.* read *Wiltshire*.
 160. 5 from bottom. After *Pride*, insert *St. Patrick's Cabbage*,
 163. 14. After *Mossy S.* insert , or *Lady's Cushion*
 170. 10. After *wild C.* insert , or *Smallage*
 172. 1. After *Hedge B.* insert , or *Stonewort*
 13. After *common G.*, insert *Herb-Gerarde*, *Ash-weed*,
 9 from bottom. After *tuberous C.* insert , or *large Pignut*
 173. 17. After *common E.* insert , or *Pignut*
 186. 13. For *E.B.* read *E.B.S.*
 192. 20. After *dwarf E.* insert , *Wallwort*,
 195. 12. For *yellow B.* read *yellow* or *Ladies' B.*, or *Cheese-rennet*
 20. For *Mugwort* read *Mugweed*
 203. 20. After *small T.* insert , or *Shepherd's-rod*

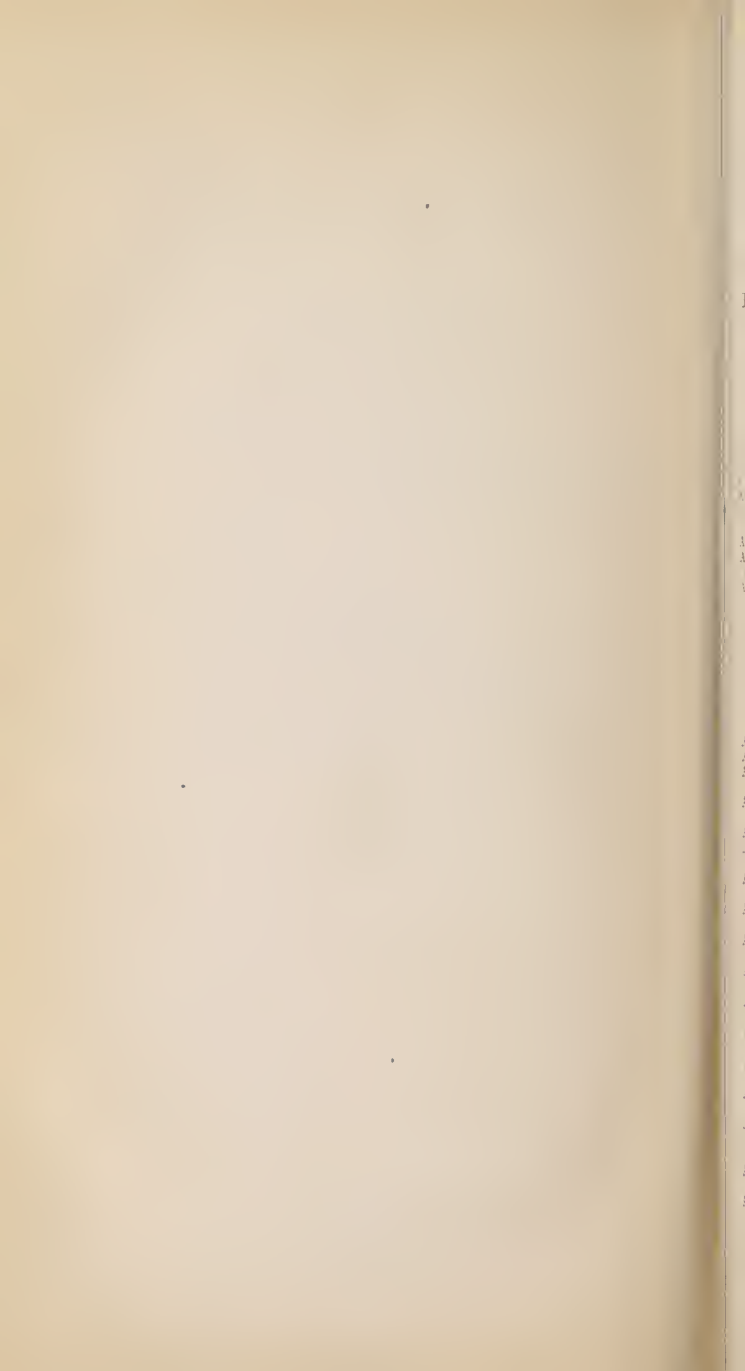
Page Line

213. 8 from bottom. For *úser* read *ásper*
 223. 17. For 2906. read 2915.
 237. 8. After *creeping P.* insert , or *Way-thistle*
 241. 11. After *greater K.* insert , or *Matfelon*
 242. 4. After *yellow S.* insert , or *St. Barnaby's-thistle*
 259. 13 from bottom. After *stinking C.* insert , or *Mayweed*
 260. 6. After *Sneeze-wort* insert , or *Goose-tongue*
 263. 2 from bottom. After *Nettle-leaved B.* insert , or *Throatwort*
 273. 3 from bottom. After *Marsh A.* insert , or *Wild Rosemary*
 286. 14. For *Calystegia.* read *Bearbind.*
 290. 3. After *narrow-leaved L.* insert , or *Cowslips of Jerusalem*
 312. 24. After *Marsh L.* insert , or *Red-rattle*
 314. 3 from bottom. After *Snapdragon.* add *Calves'-snout.*
 318. 26. After *great M.* insert , *High Taper, Cow's Lungwort, or Shepherd's Club*
 327. 10 from bottom. After *Wood G.* insert , or *Wood Sage*
 336. 6. After *Ground-Icy* insert , *Gill, or Alehoof*
 338. 6. For *cilia,* read *ciliæ,*
 350. 11. For (*Brookweed, L.* read *L. (Brookweed,*
 353. 18 from bottom. After *greater P.* insert , or *Way-bread*
 354. 6 from bottom. After *Buck's-horn P.* insert , or *Star of the earth*
 361. 1. After *Nettle-leaved G..* insert , or *Sowbane*
 362. 27. After *Mercury G.,* insert *All-good,*
 365. 8. After *entire,* insert *perianth of the fruit rhomboidal usually tubercular on the back united below the angles,*
 10. & 13. Delete *rhomboidal*
 11. Delete *smooth on the back*
 14. Delete *usually tubercular on the back*
 368. 16 from bottom. For *erect patent* read *creeto-patent*
 370. 4 from bottom. After *common B.* insert , or *Brank*
 375. 10 from bottom. For *cordate oblong* read *cordate-oblong*
 3 from bottom. For *linear lanceolate* read *linear-lanceolate*
 383. 20. For *3-cleft* read *3, bifid*
 7 from bottom. After *Sun S.* insert , or *Wartwort*
 384. 15 from bottom. For *h.* read *4.*
 400. 24. For *ovate oblong* read *ovate-oblong*
 403. 5. For *et* read *and of*
 409. 16. For *elliptic oblong* read *elliptic-oblong*
 432. 5. For *4. 3.* read *4. 8.*
 436. 1. For *24.* read *34.*
 8. For *segment* read *segment*
 441. 5. For *Gladiolus.* read *Gladiolc.*
 444. 7. After *pale N.* insert , or *Prinrose Peerless*
 445. 17. After *common B.* insert , or *Lady's Seal*
 446. 7. After *common H.* insert , *Truelove, or One-berry*
 448. 20 from bottom. After *common B.* insert , or *Knee-holly*
 450. 24. For *bicólor* read *bieolor*

Page Line

463. 12. *After obtuse. insert—* α . anthers as long as their filaments.
 13. *After Mœneh. insert—* β . anthers elliptical half the length of the filaments. *J. nigrifellus Koch.*
 15. *After water. insert—* β . Ivy Bridge, Devon. Connemara, Galway.
464. 14. *For oval oblong read oval-oblong*
 465. 10. *After Heath R. insert , or Goose-corn*
 469. 19. *After common F. insert , or Water Gladiole*
 496. 10. *For obovate oblong read obovate-oblong*
 503. 23. *For Boenninghausiána read Boenninghauseniána*
 520. 21 from bottom. *For rounded read convex*
 10 from bottom. *For spikelet read spikelets*
 3 from bottom. *For rounded read terete*
538. 19. *After Marsh B. insert , or Fiorin*
 543. 2, 3. *For the description of the Spikelets substitute:—Spikelets ovate, awnless, with 2—5 florets, of which the 1—3 upper ones are rudimentary and neuter, and usually pedicellate.*
 11. *For 2 flowered read with 2 perfect florets and 1—2 stalked neuter ones.*
 21, 22. *For glabrous perfect floret read perfect glabrous floret and a stalked neuter one.*
570. 16. *Add:—Mr. Babington in his Flora of Cambridgeshire, p. 310, has referred this species to T. acutum DC. and added to the British Flora T. pungens Pers. ; this last is extremely common and is another of the forms which unite T. junceum to T. repens : it scarcely differs from T. laxum.*
576. 23. *for below. Sorus read below the sorus.*

INDEX



LATIN INDEX

TO

THE CLASSES, SUB-CLASSES, NATURAL ORDERS, AND
GENERIC AND SPECIFIC NAMES.

* * The synonyms and names of plants merely mentioned are in *Italics*.

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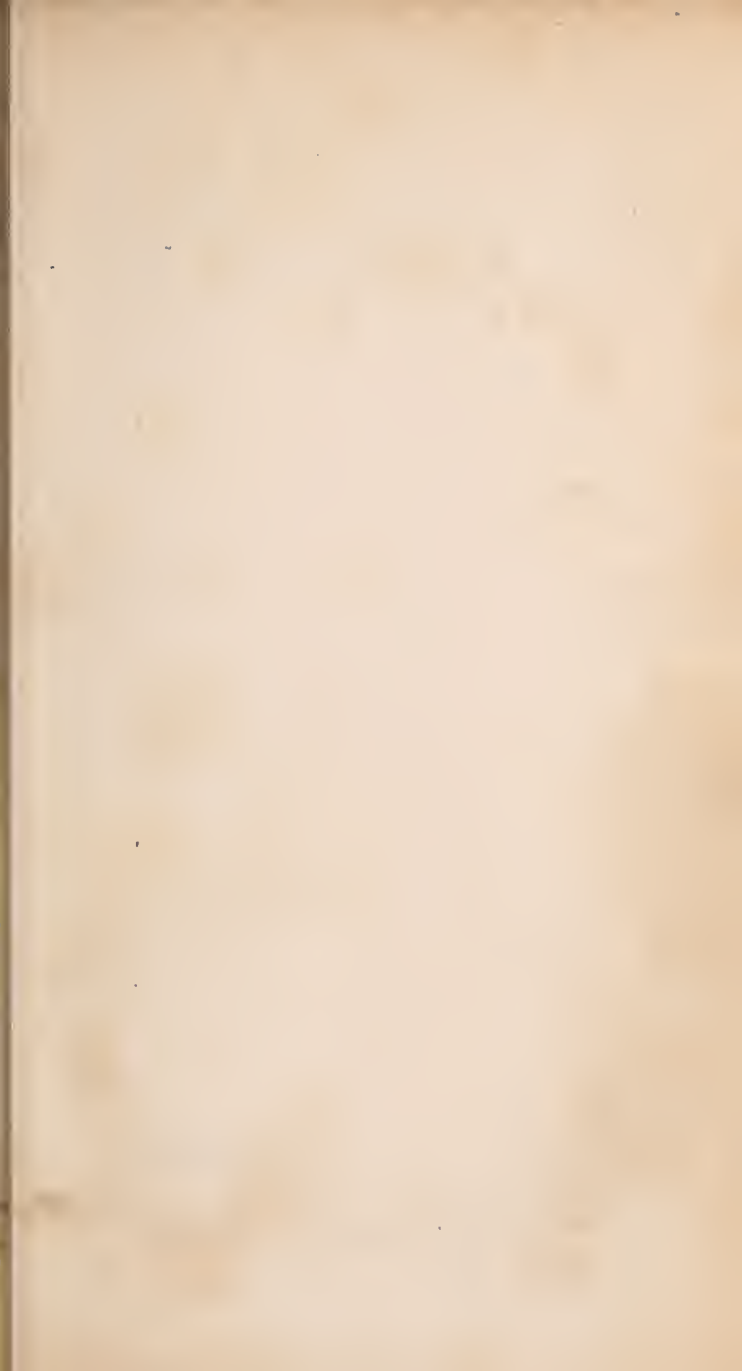
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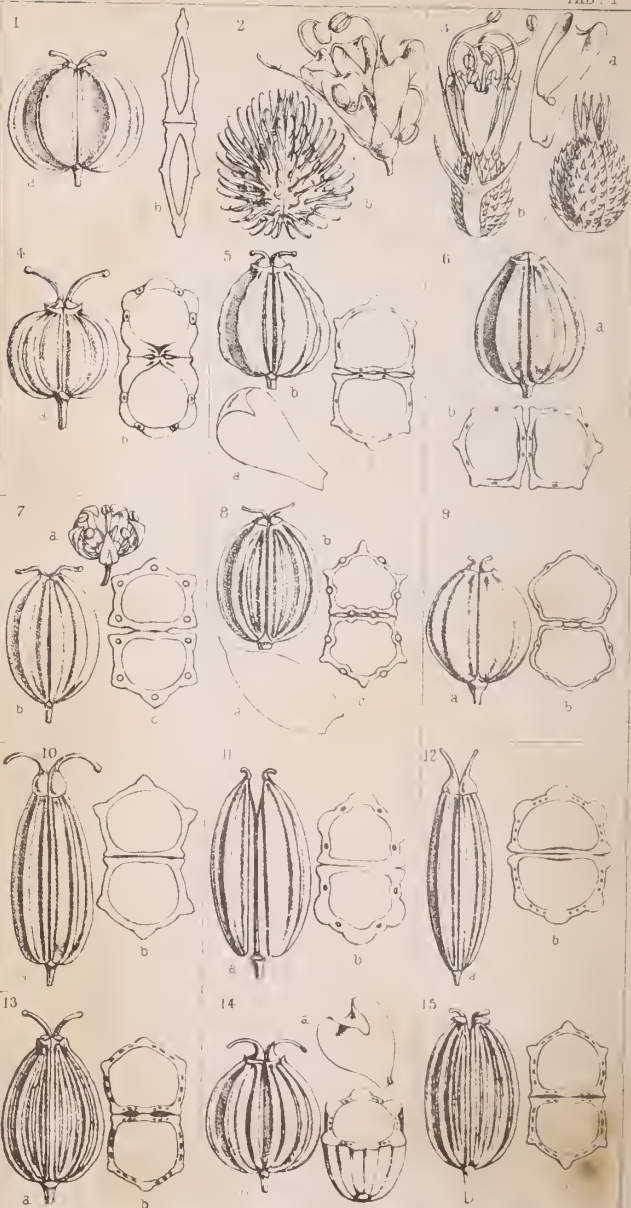
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THE END.

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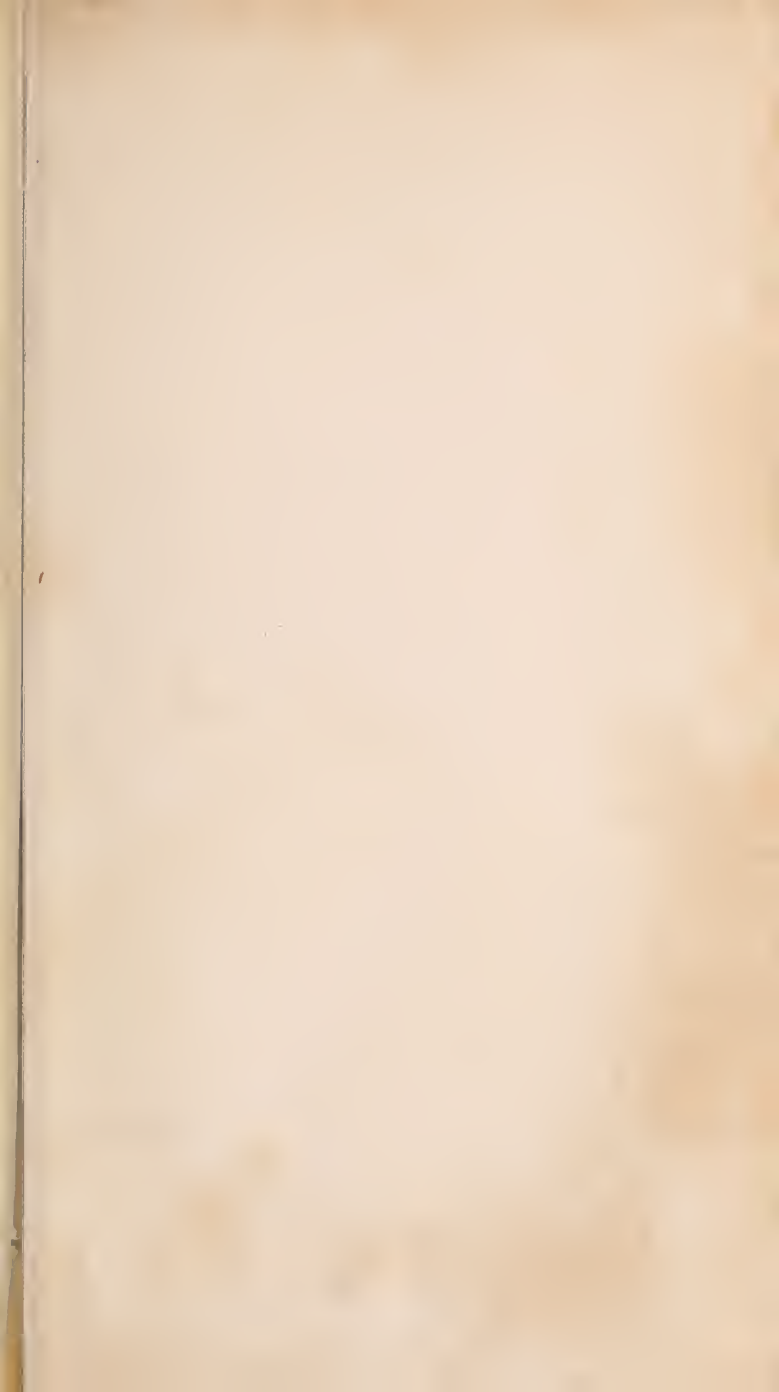
THE BINDER will observe that these explanations must be placed
opposite their respective Plates.

TABLE I.

UMBELLIFERÆ.

- Fig. 1. HYDROCOTYLE.—*a*. Fruit. *b*. Transverse section.
Fig. 2. SANICULA.—*a*. Barren flower. *b*. Fruit.
Fig. 3. ERYNGIUM.—*a*. Petal. *b*. Flower with a 3-cleft scale
at its base. *c*. Fruit.
Fig. 4. CICUTA.—*a*. Fruit. *b*. Transverse section.
Fig. 5. APIUM.—*a*. Petal. *b*. Fruit. *c*. Transverse section.
Fig. 6. PETROSELINUM.—*a*. Fruit. *b*. Transverse section.
Fig. 7. TRINIA.—*a*. Barren flower. *b*. Fruit. *c*. Transverse
section.
Fig. 8. HELOSCIADIUM.—*a*. Petal. *b*. Fruit. *c*. Transverse
section.
Fig. 9. SISON.—*a*. Fruit. *b*. Transverse section.
Fig. 10. ÆGOPODIUM.—*a*. Fruit. *b*. Transverse section.
Fig. 11. CARUM.—*a*. Fruit. *b*. Transverse section.
Fig. 12. BUNIUM.—*a*. Fruit. *b*. Transverse section.
Fig. 13. PIMPINELLA.—*a*. Fruit. *b*. Transverse section.
Fig. 14. SIUM.—*a*. Petal. *b*. Fruit. *c*. Transverse section of
a single carpel.
Fig. 15. BUPLEURUM.—*a*. Fruit. *b*. Transverse section.





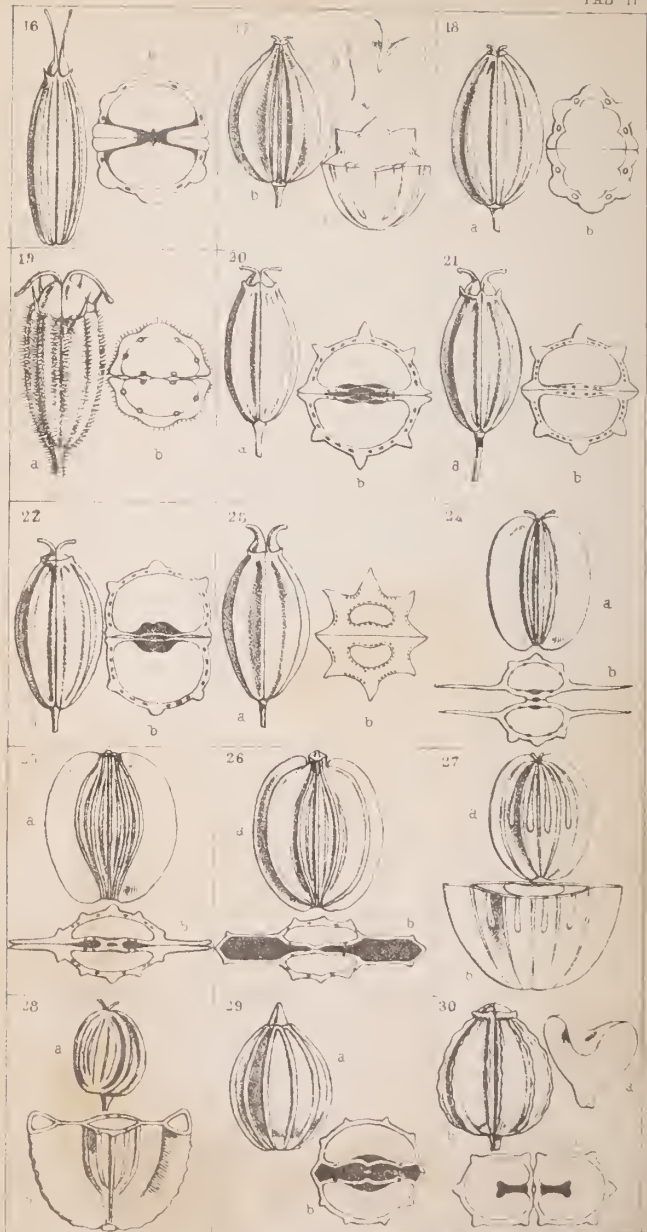


TABLE II.

UMBELLIFERÆ — *continued.*

- Fig. 16. *ŒNANTHE*.—*a.* Fruit. *b.* Transverse section.
Fig. 17. *ÆTHUSA*.—*a.* Petal. *b.* Fruit. *c.* Transverse section.
Fig. 18. *FÆNICULUM*.—*a.* Fruit. *b.* Transverse section.
Fig. 19. *SESELI*.—*a.* Fruit. *b.* Transverse section.
Fig. 20. *LIGUSTICUM*.—*a.* Fruit. *b.* Transverse section.
Fig. 21. *SILAUS*.—*a.* Fruit. *b.* Transverse section.
Fig. 22. *MEUM*.—*a.* Fruit. *b.* Transverse section.
Fig. 23. *CRITHMUM*.—*a.* Fruit. *b.* Transverse section.
Fig. 24. *ANGELICA*.—*a.* Fruit. *b.* Transverse section.
Fig. 25. *PEUCEDANUM*.—*a.* Fruit. *b.* Transverse section.
Fig. 26. *PASTINACA*.—*a.* Fruit. *b.* Transverse section.
Fig. 27. *HERACLEUM*.—*a.* Fruit. *b.* Transverse section of a
single carpel.
Fig. 28. *TORDYLIUM*.—*a.* Fruit. *b.* Transverse section of a
single carpel.
Fig. 29. *CORIANDRUM*.—*a.* Fruit. *b.* Transverse section.
Fig. 30. *CONIUM*.—*a.* Petal. *b.* Fruit. *c.* Transverse section.



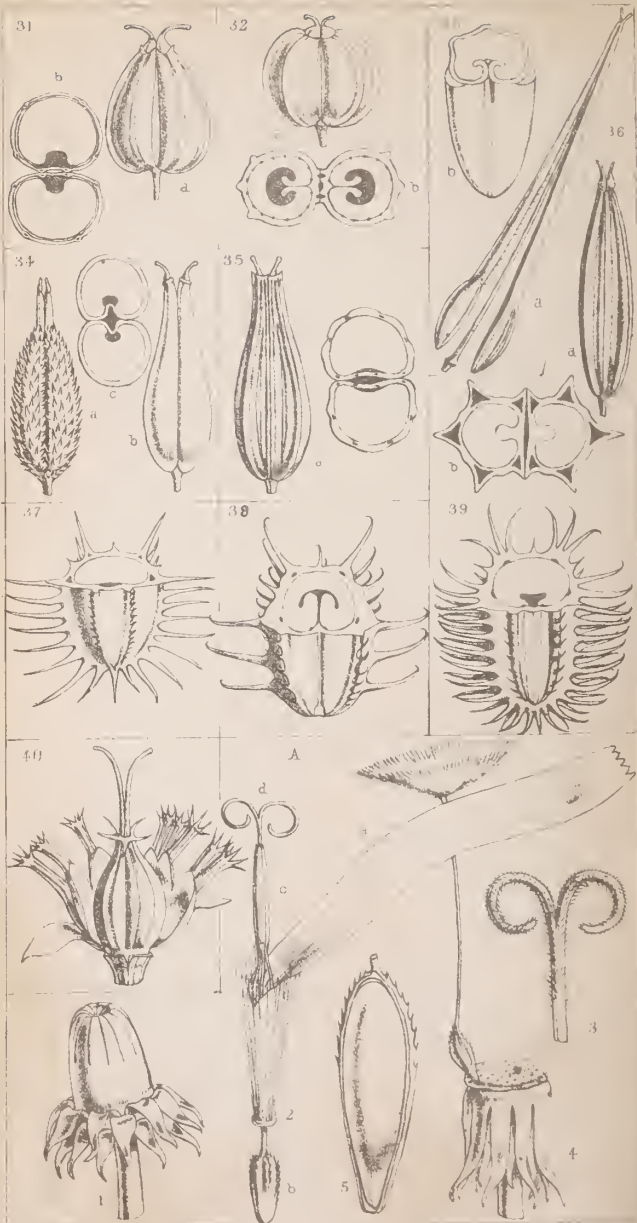


TABLE III.

UMBELLIFERÆ—*continued.*

- Fig. 31. *PHYSOSPERMUM*.—*a.* Fruit. *b.* Transverse section.
Fig. 32. *SMYRNIUM*.—*a.* Fruit. *b.* Transverse section.
Fig. 33. *SCANDIX*.—*a.* Fruit. *b.* Transverse section of a single
carpel.
Fig. 34. *ANTHRISCUS*.—*a. b.* Fruits. *c.* Transverse section.
Fig. 35. *CHÆROPHYLLUM*.—*a.* Fruit. *b.* Transverse section.
Fig. 36. *MYRRHIS*.—*a.* Fruit. *b.* Transverse section.
Fig. 37. *DAUCUS*.—Transverse section of a single carpel.
Fig. 38. *CAUCALIS*.—Transverse section of a single carpel.
Fig. 39. *TORILIS*.—Transverse section of a single carpel.
Fig. 40. *ECHINOPHORA*.—Fruit, with its prickly receptacle.

COMPOSITÆ.

- A. *LEONTODON*.—(For the explanation of these figures, see
p. 208, foot-note.)



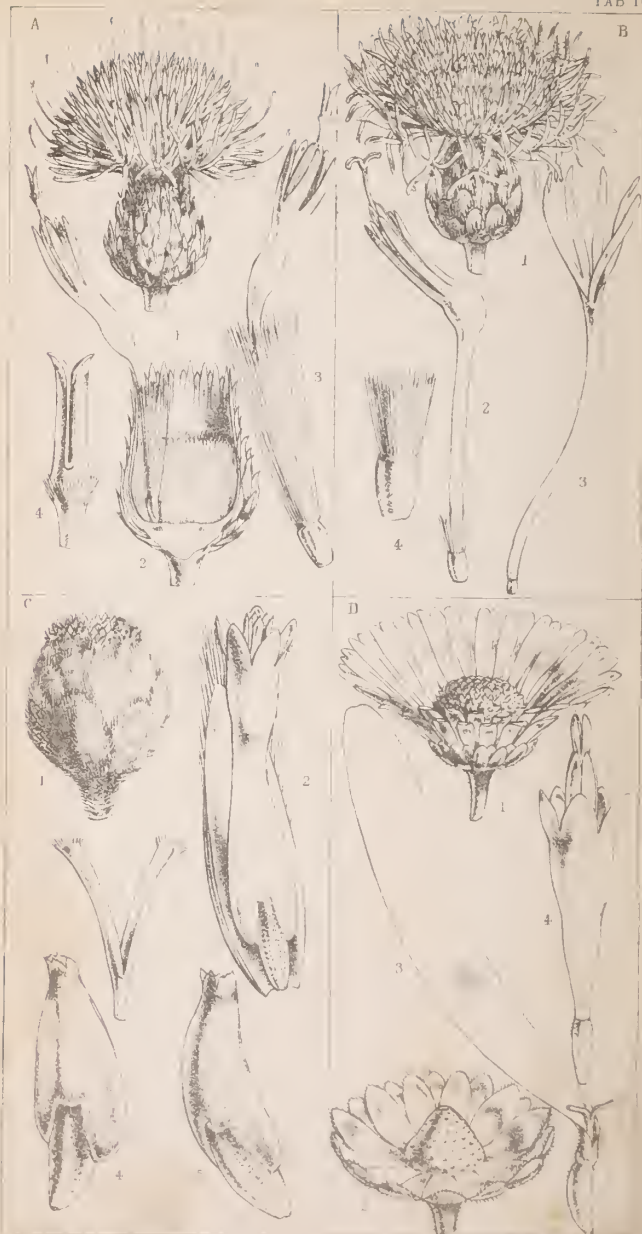


TABLE IV.

COMPOSITÆ—*continued.*

- | | | |
|---------------|---|---|
| A. CARDUUS. | } | (For the explanation of these figures, see
p. 234, foot-note.) |
| B. CENTAUREA. | | |
| C. DIOTIS. | } | (For the explanation of these figures, see p. 242,
foot-note.) |
| D. BELLIS. | | |



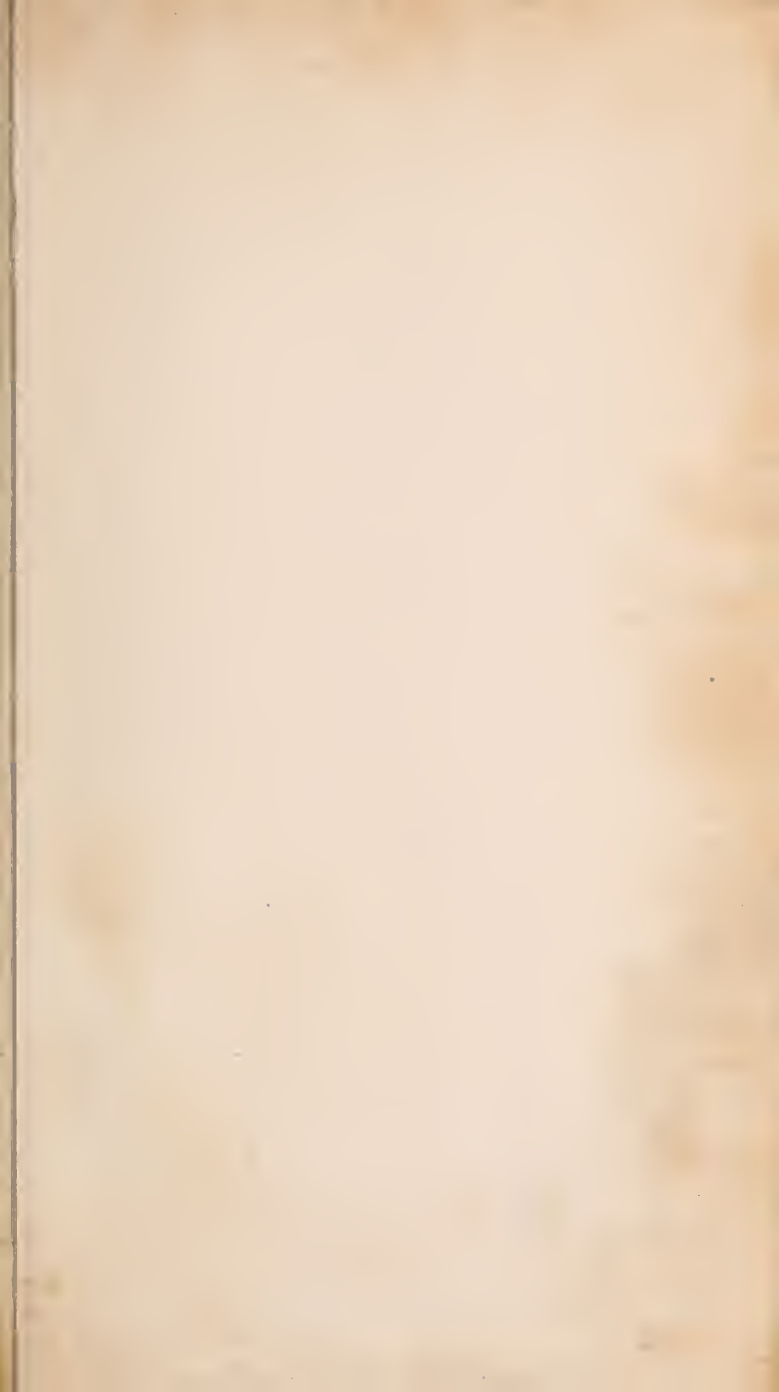




TABLE V.

COMPOSITÆ.

Anomalous Genus.

XANTHIUM.—(For the explanation of these figures, see p. 261,
foot-note.)



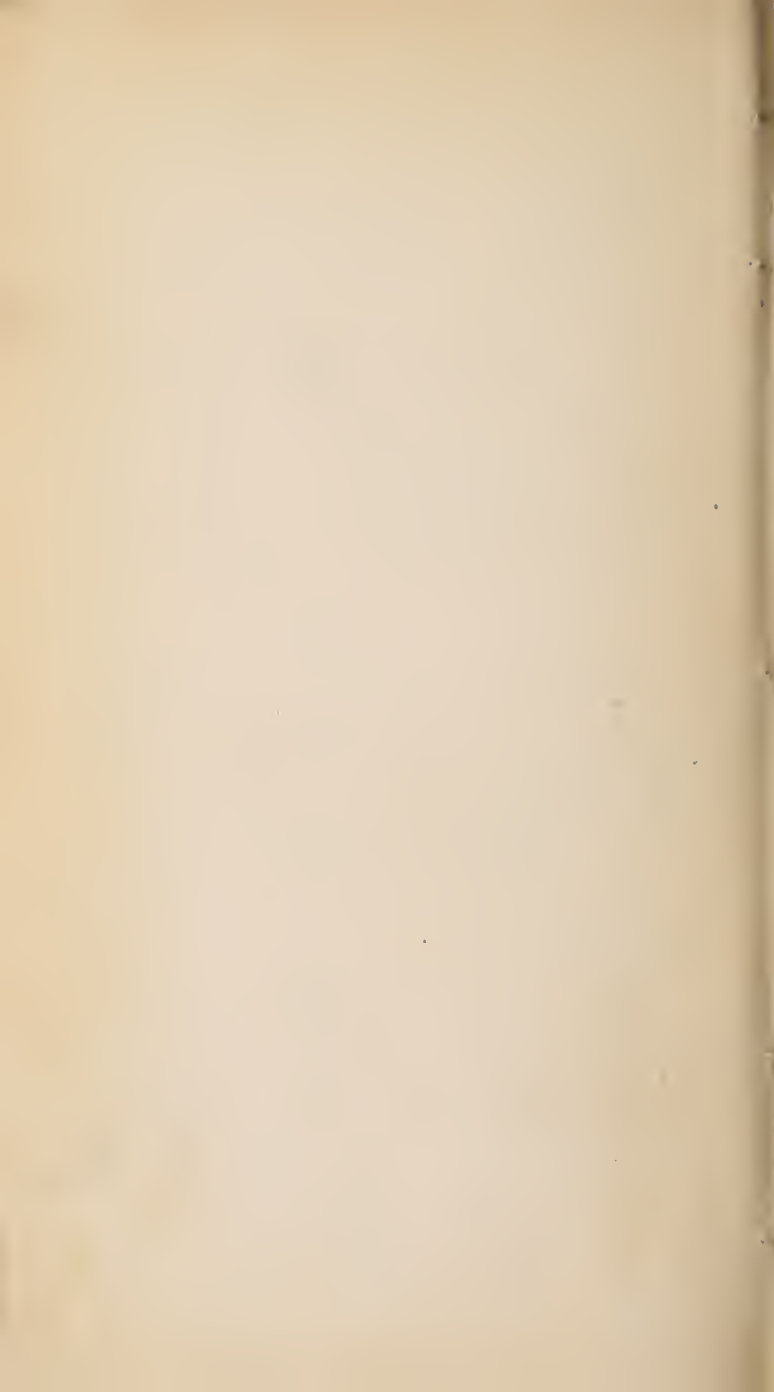




TABLE VI.

GRAMINEÆ.

- Fig. 1. *ANTHOXANTHUM*.—*a*. Spikelet. *b*. The same from which the glumes are removed, showing the two neuter glumellas. *c*. The glumellas of the inner awnless and fertile floret.
- Fig. 2. *NARDUS*.—*a*. The two glumellas destitute of glumes. *b*. Pistil with its single style and stigma.
- Fig. 3. *ALOPECURUS*.—*a*. Spikelet with its two glumes. *b*. Solitary glumella with its awn.
- Fig. 4. *PHALARIS*.—*a*. Glumes. *b*. Glumellas of the fertile floret, with the glumellas of two other neuter florets.
- Fig. 5. *PSAMMA*.—*a*. Spikelet. *b*. Floret with the tuft of hairs at the base.
- Fig. 6. *PHLEUM*.—*a*. Glumes. *b*. Floret with its glumellas.
- Fig. 7. *LAGURUS*.—*a*. Glumes. *b*. Floret with its glumellas.
- Fig. 8. *MILIUM*.—*a*. Spikelet. *b*. Floret.
- Fig. 9. *GASTRIDIVM*.—*a*. Glumes, swollen at the base. *b*. Floret with its two glumellas.
- Fig. 10. *POLYPOGON*.—*a*. Glumes. *b*. Floret with its glumellas.
- Fig. 11. *STIPA*.—*a*. Spikelet with the very long twisted awn terminating the floret. *b*. Glumes. *c*. Glumellas, the long awn being cut away from the outer one.
- Fig. 12. *CALAMAGROSTIS*.—*a*. Spikelet. *b*. Floret, surrounded by hairs at the base.
- Fig. 13. *AGROSTIS*.—*a*. Glumes. *b*. Floret with the glumellas.
- Fig. 14. *CATABROSA*.—*a*. Spikelet. *b*. Floret.





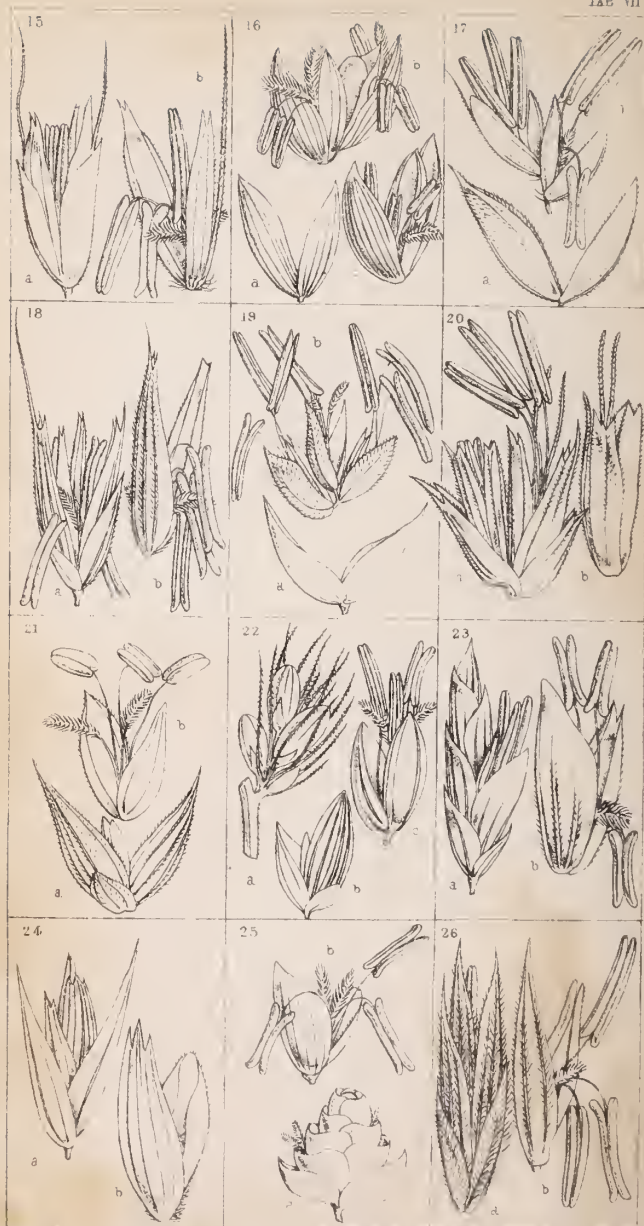


TABLE VH.

GRAMINEÆ—*continued.*

- Fig. 15. AIRA.—*a.* Spikelet. *b.* Floret with its glumellas.
- Fig. 16. MELICA.—*a.* Glumes. *b.* Two fertile florets from the spikelet, with the rudiment of a third floret (neuter) between them. *c.* One fertile floret from the spikelet, with its neuter floret.
- Fig. 17. HOLCUS.—*a.* Glumes. *b.* Two florets from the spikelet; the upper one barren (with stamens only) and awned; the lower one perfect and awnless.
- Fig. 18. ARRHENATHERUM.—*a.* Spikelet, with two florets; the lowest floret barren, with a long twisted awn; the upper (shown separately at *b*) perfect, with a short straight bristle.
- Fig. 19. HIEROCHLOE.—*a.* Glumes. *b.* The three florets, of which the two lateral ones are triandrous, and without a pistil; the middle one perfect, and diandrous.
- Fig. 20. SESLERIA.—*a.* Spikelet. *b.* Floret.
- Fig. 21. PANICUM.—*a.* Unequal glumes, with the neutral floret inside the smaller glume. *b.* Fertile floret.
- Fig. 22. SETARIA.—*a.* Bristly involucre with the spikelets. *b.* Unequal glumes, with the neuter floret inside the smaller one. *c.* Perfect floret.
- Fig. 23. POA.—*a.* Spikelet. *b.* Floret.
- Fig. 24. TRIODIA.—*a.* Spikelet. *b.* Glumellas of a floret.
- Fig. 25. BRIZA.—*a.* Spikelet. *b.* Floret.
- Fig. 26. DACTYLIS.—*a.* Spikelet. *b.* Floret.



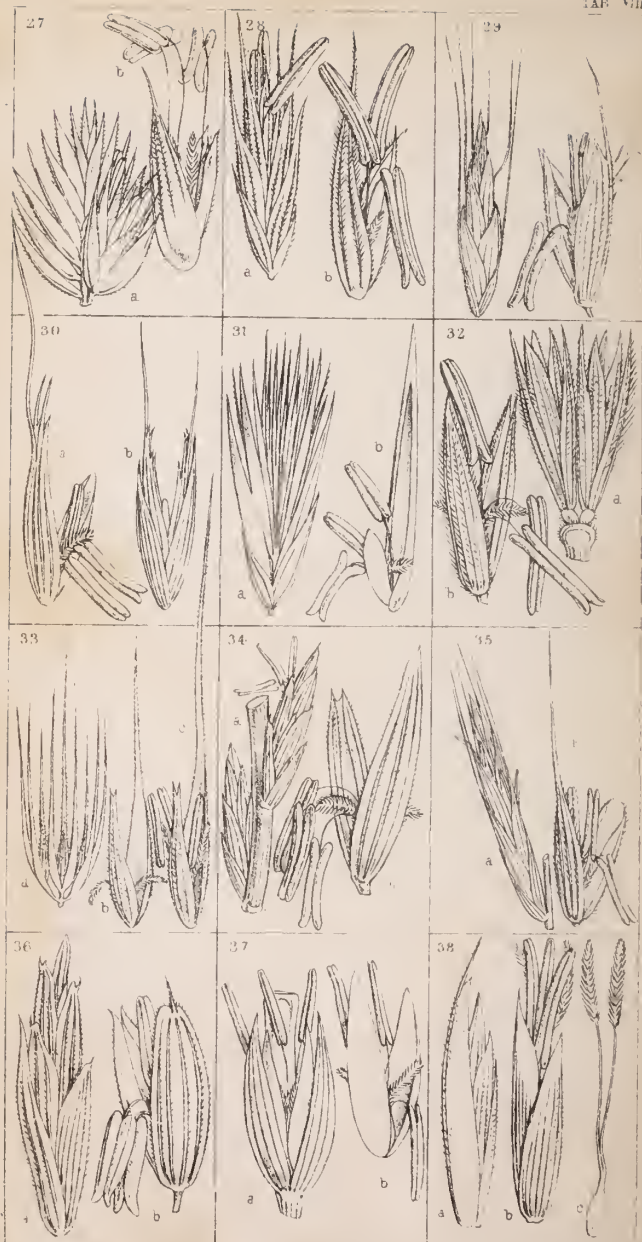
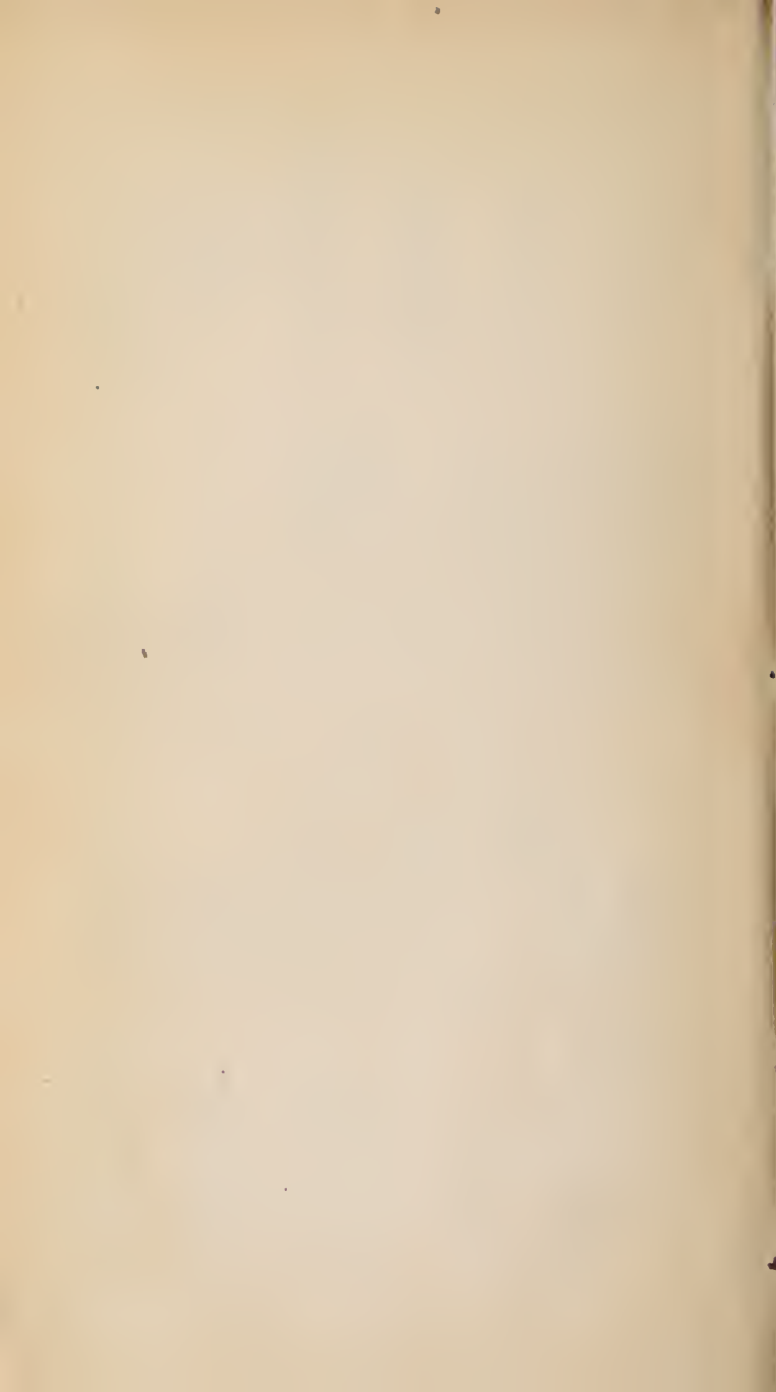


TABLE VIII.

GRAMINEÆ—*continued.*

- Fig. 27. CYNOSURUS.—*a.* Spikelet, with the pectinate involucre. *b.* Floret.
- Fig. 28. FESTUCA.—*a.* Spikelet. *b.* Floret.
- Fig. 29. BRONUS.—*a.* Spikelet. *b.* Floret.
- Fig. 30. AVENA.—*a.* Floret. *b.* Spikelet.
- Fig. 31. PHRAGMITES.—*a.* Spikelet. *b.* Floret.
- Fig. 32. ELYMUS.—*a.* Two spikelets from the same joint of the rachis, each with two florets. *b.* Floret.
- Fig. 33. HORDEUM.—*a.* Three spikelets from the same joint of the rachis, each with a single floret. *b.* One of the lateral (barren) florets. *c.* Central (perfect) one.
- Fig. 34. TRITICUM.—*a.* Two spikelets, one from each joint of the rachis. *b.* Floret.
- Fig. 35. BRACHYPODIUM.—*a.* Spikelet. *b.* Floret.
- Fig. 36. LOLIUM. — *a.* Spikelet, with its single glume. *b.* Floret.
- Fig. 37. LEPTURUS.—*a.* Spikelet on the rachis, with the two collateral glumes. *b.* Floret.
- Fig. 38. SPARTINA.—*a.* Spikelet. *b.* Floret. *c.* Pistil.





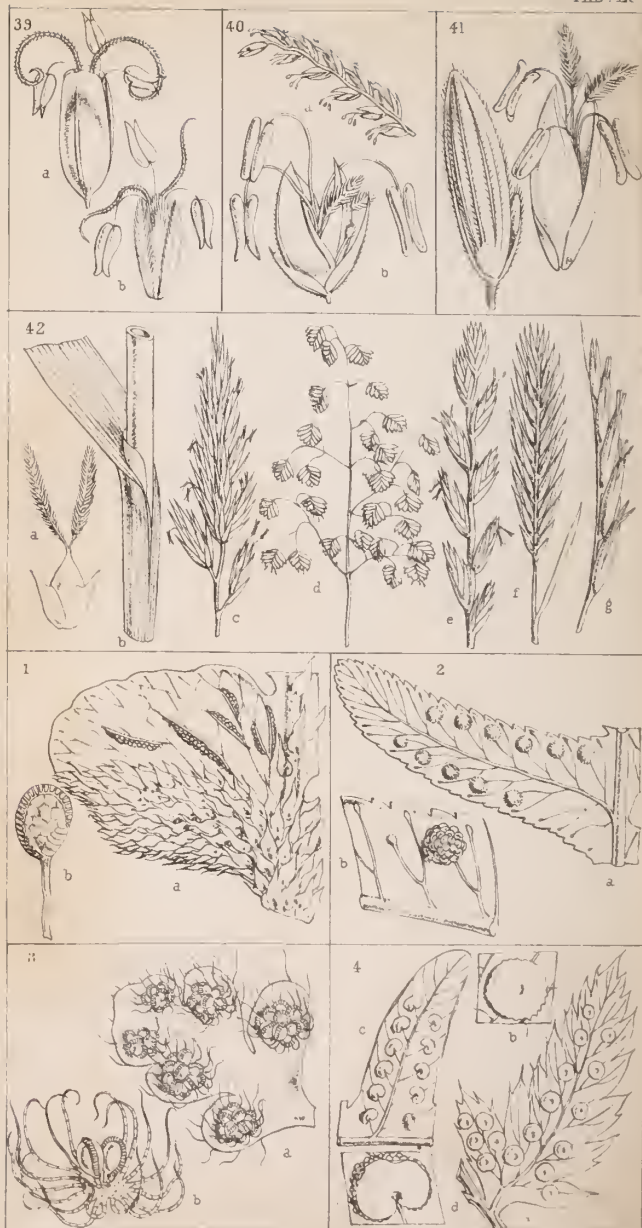


TABLE IX.

GRAMINEÆ—continued.

- Fig. 39. KNAPPID.—*a.* Spikelet. *b.* Floret and glumellas.
- Fig. 40. CYNODON.—*a.* Portion of a spike. *b.* Spikelet.
- Fig. 41. DIGITARIA.—*a.* Spikelet. *b.* Fertile floret and glumellas.
- Fig. 42. *a.* Pistil of a grass with its hypogynous scales. *b.* Portion of the stem of a grass, with the *ligule* upon the leaf, and the sheath slit on one side. *c—g.* Examples of the inflorescence of grasses. *c.* Spike-like panicle, as in *Anthoxanthum*. *d.* Panicle, as in *Briza minor*. *e.* Spike, the spikelets distichous, as in *Lolium perenne*. *f.* Spike, the spikelets imbricated on all sides, as in *Triticum cristatum*. *g.* Partial spike unilateral, or with the flowers pointing one way, as in *Spartina stricta*.

FILICES.

POLYPODIACEÆ.

- Fig. 1. CETERACH.—*a.* Segment of a frond, from part of which the scales have been removed. *b.* Capsule.
- Fig. 2. POLYPODIUM.—*a.* Segment of a frond. *b.* Portion of the same.
- Fig. 3. WOODSIA.—*a.* Pinna. *b.* Involucre, most of the capsules removed.
- Fig. 4. ASPIDIUM.—*a.* Pinna of first division; *b.* sorus and involucre. *c.* Pinnule of second division; *d.* sorus and involucre.





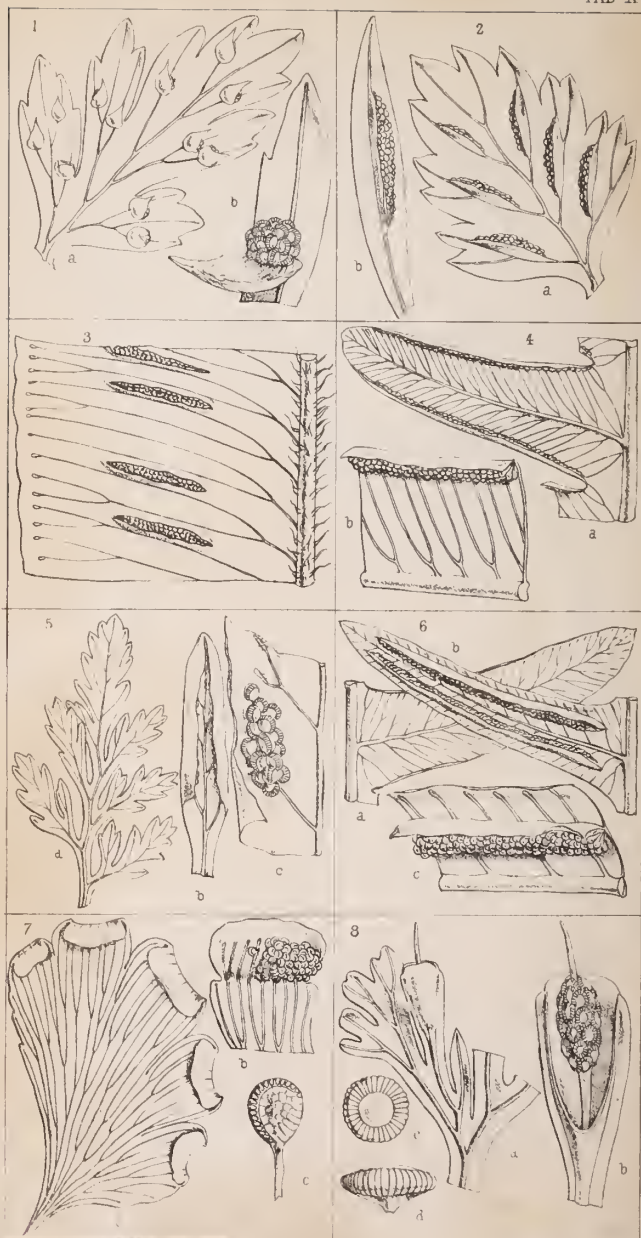


TABLE X.

FILICES.

POLYPODIACEÆ—*continued.*

- Fig. 1. CYSTOPTERIS.—*a.* Pinnule. *b.* Sorus and involucre.
- Fig. 2. ASPLENIUM.—*a. b.* Pinnules.
- Fig. 3. SCOLOPENDRIUM.—Portion of a frond.
- Fig. 4. PTERIS.—*a.* Segment of a frond. *b.* Smaller portion of the same.
- Fig. 5. CRYPTOGRAMME.—*a.* Portion of a barren frond. *b.* Portion of a fertile frond. *c.* Involucre laid open.
- Fig. 6. BLECHNUM.—*a.* Segment of a barren frond. *b.* Pinnule of a fertile frond. *c.* Portion of a sorus and involucre.
- Fig. 7. ADIANTUM.—*a.* Pinnule. *b.* Sorus; the involucre laid open, and part of the capsules removed. *c.* Capsule.
- Fig. 8. TRICHOMANES.—*a.* Portion of a frond. *b.* Involucre laid open. *c. d.* Capsules.





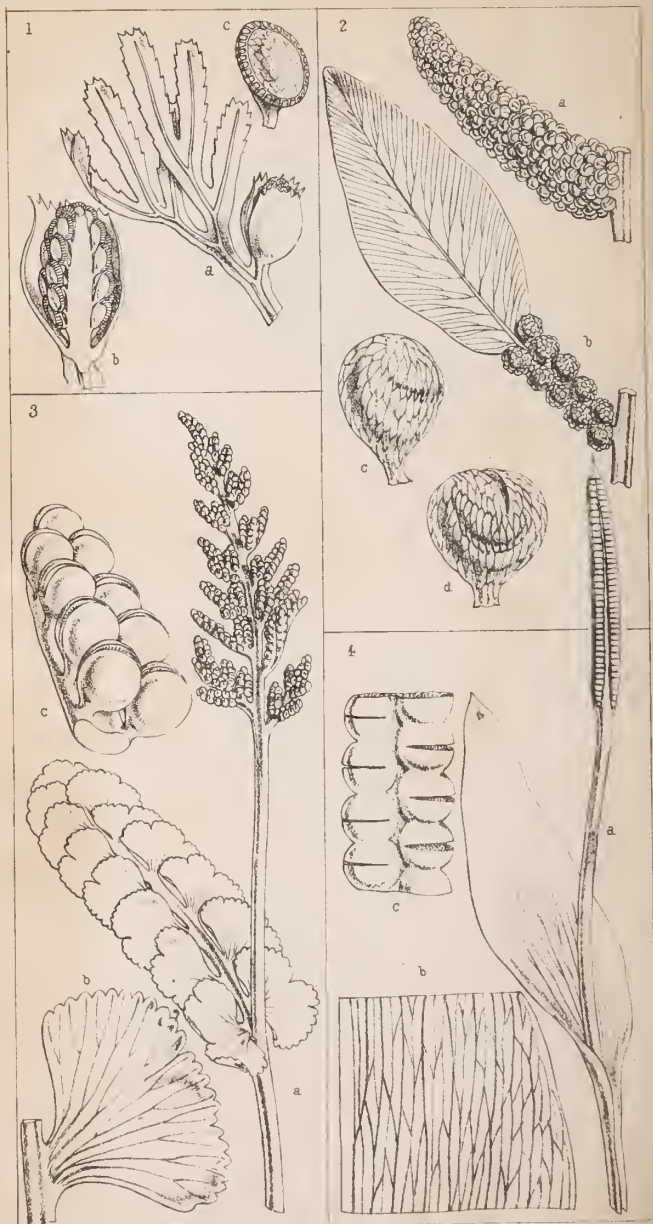


TABLE XI.

FILICES.

POLYPODIACEÆ—*continued*.

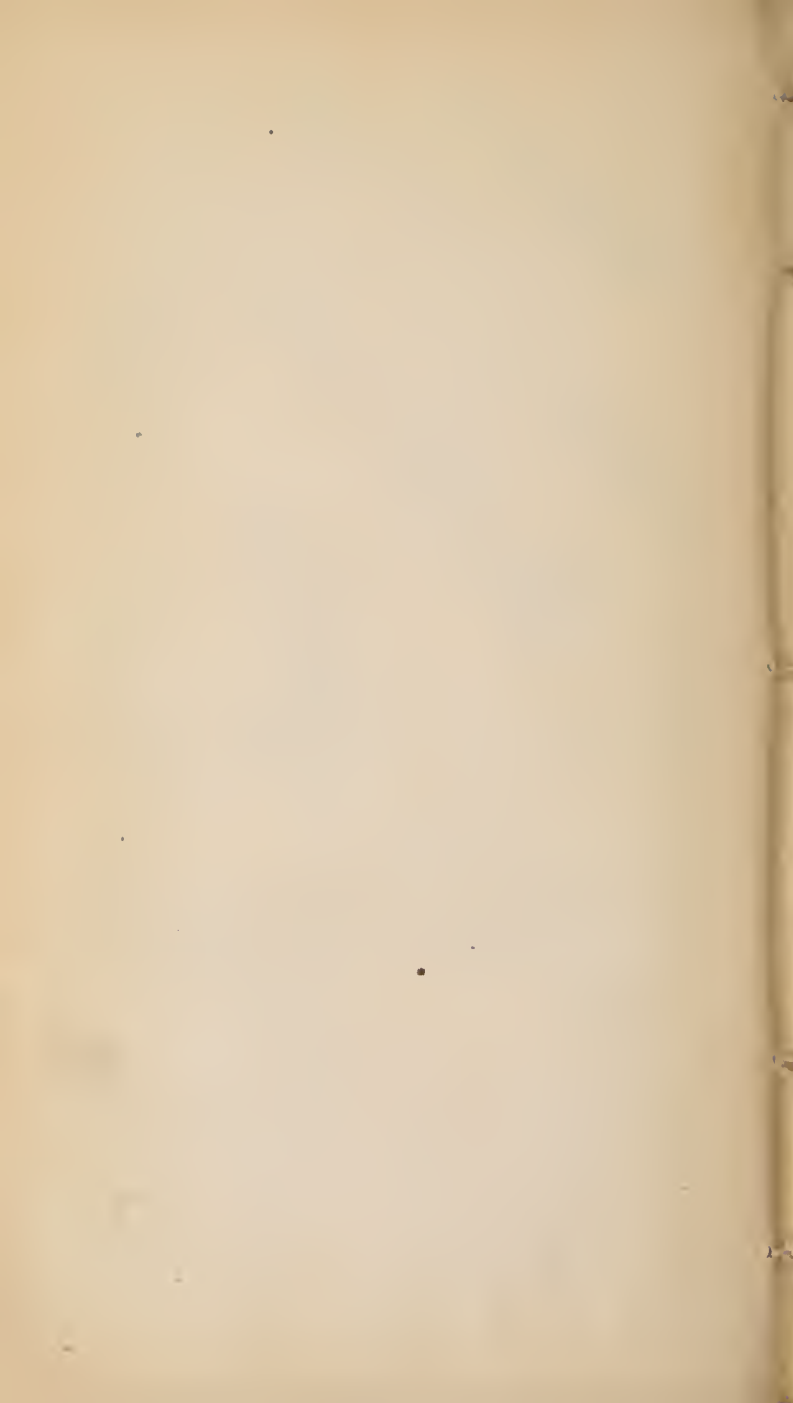
- Fig. 1. HYMENOPHYLLUM.—*a*. Fertile portion of a frond. *b*. Involucre laid open. *c*. Capsule.

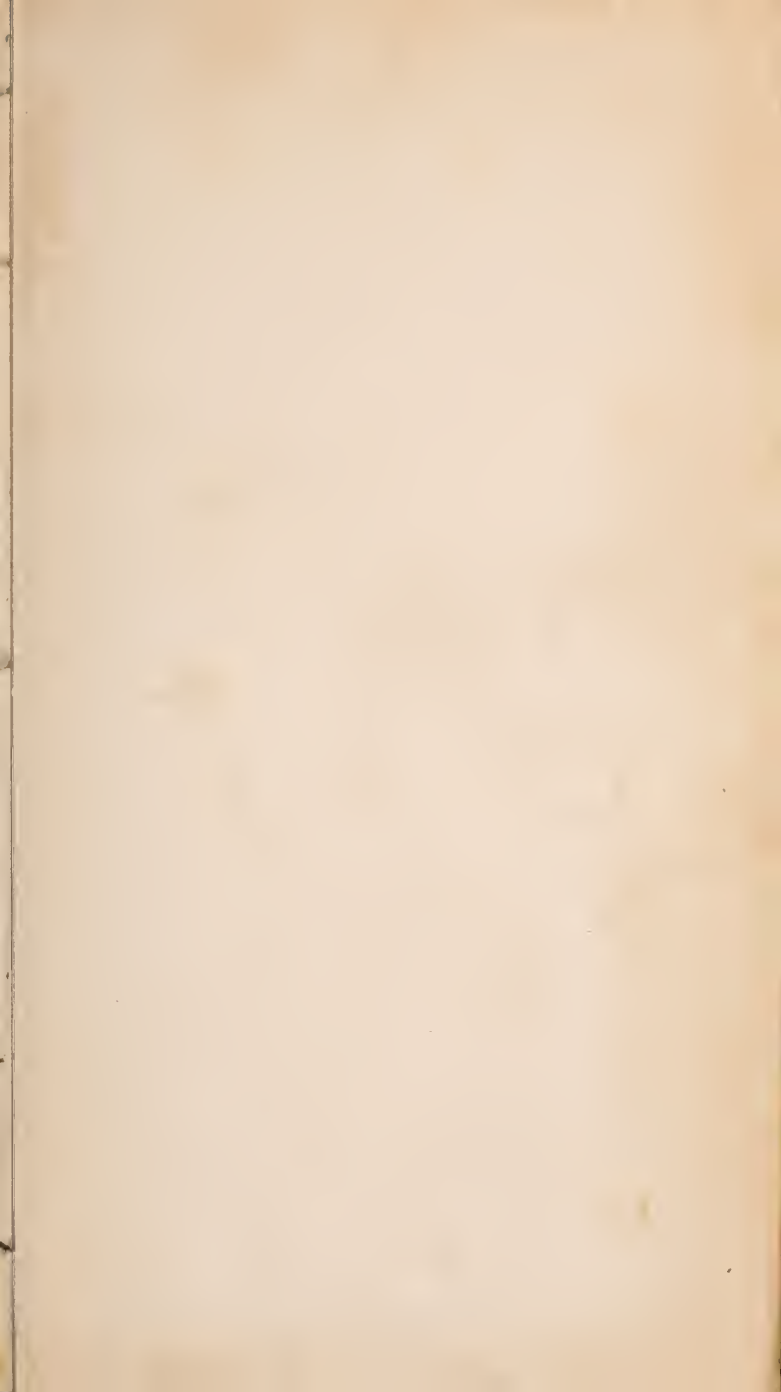
OSMUNDACEÆ.

- Fig. 2. OSMUNDA.—*a*. Portion of a fertile panicle. *b*. Portion of a barren frond, the lower part fertile. *c. d*. Capsules.

OPHIOGLOSSACEÆ.

- Fig. 3. BOTRYCHIUM.—*a*. Frond with its fructified portion. *b*. Barren pinna. *c*. Capsules on the rachis.
- Fig. 4. OPHIOGLOSSUM.—*a*. Frond with its fructified portion. *b*. Portion of the frond. *c*. Portion of the fertile spike.







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